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AMERICAN VETERINARY REVIEW.

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AMERICAN VETERINARY REVIEW,

APRIL, 1878.

ORIGINAL ARTICLES.

ADDRESS

DELIVERED AT THE ANNUAL EXERCISES OF THE

AMERICAN VETERINARY COLLEGE,

By Prof. J. C. DALTON, M.D.,

Of the College of Physicians and Surgeons, New York City.

:o:

Mr. President, and Gentlemen of the Class: It gives me great pleasure to meet you on the occasion of your graduating from this school of Veterinary Medicine. I do not doubt that, on your part, you feel a sense of gratification at having finished your period of pupilage, and in looking forward to a life of practical activity. I hope you have fully enjoyed your time of study, which has passed, and I trust you will have an abundant success in the future. In fact, this is one of the most interesting epochs in the life of every man who devotes himself to any department of medical science or art. He has gone through with his preliminary studies, and has gained a certain insight into a subject which at first seemed altogether confused and difficult. And I am certain that during the period of your instruction here, you have been convinced of at least one thing beyond a question; and that is, that the more you learn, the more knowledge you find there is to be acquired. No man can hope to follow with success such an occupation as yours without feeling a love for it, and appreciating how much there is in it to deserve his devotion and industry. There is no danger that you will ever find it exhausted. There will always be something to add, or improve, or complete; and the more you do of this, the better you will deserve your success.

Now, gentlemen, what have you been doing here for the last two years? You have been putting yourselves in a position to understand the business you are to follow. You know very well that it is useless for a man to try to do anything without knowing from the start exactly what he is about. Under the guidance and instruction of your professors, you began at the beginning, and so laid the foundation of your veterinary knowledge. You first made yourselves acquainted with anatomy. The construction of the animal machine is the first thing essential for you to know; because it is a machine which you undertake to keep in order, and it would be wasting time to try that, until you understand it in all its parts. The form and texture of the bones, the mechanism of the joints, the strength and position of the muscles and ligaments, where they are visible externally, how they hold the body together and enable it to move this way or that; all these are perhaps the simplest of the things which you have studied, but for that very reason they were the first and the most important, for you could not get on without them.

Then came the physiological action of the different organs, the movements of circulation and respiration, the digestion of food, the growth of the parts, and all the extraordinary endowments of the nerves and senses.

So far, you were occupied in learning all you could about the healthy organism in its natural condition. And I suppose that much of your future practice will be embraced in this portion of the subject. The whole question of hygiene, of proper feeding and exercise, of stabling and grooming, and of breeding and raising, so as to get the highest development of strong and healthy qualities, comes entirely within the range of strictly anatomical and physiological knowledge. Even in a practical point of view, therefore, this is by no means the least important part of your education.

But you will also be largely interested in the cure or alleviation of maladies; and the next step is to learn what these maladies are. For the diseases and morbid affections of the animal frame have a natural history, like its healthy functions. They do not come by accident or helter-skelter; but every one has a defi-

nite cause, and a particular progress and termination, and is known by its signs and effects, as much so as the natural actions going on in the living body. All these things you have studied, and with them you have been taught the instruments and remedies of the veterinary art, and how to use them to the best purpose.

You have also had the indispensable advantage of clinical instruction. It is one thing to read about a disease, or to hear of it in a lecture, and another thing to have it shown to you, so that you will know it yourselves when you see it afterward. This is true in all the departments of medical study—in anatomy, in physiology, in pathology and in practice. Reading about a thing or hearing of it, to be sure, is better than nothing; and the student must always begin in that way. But when he has once seen the thing, and seen it intelligently, he knows it in a very different way from what he did before. Then he appreciates it as a reality; and beside that, it is impressed on his memory, so that he could not forget it if he tried. I have no doubt that you remember your clinical instruction in the Veterinary Hospital as among the most valuable and lasting benefits derived from your whole course of education.

I presume that I hardly need to congratulate you on the kind of work you have chosen for the business of your lives. Anything as useful and important as Veterinary Medicine and Surgery is abundantly worthy the best attention of its practitioners. But it has some features which make it particularly attractive. The largest portion of your practical skill will be called in requisition for the treatment of the horse; and this noblest and most valuable of the domesticated animals will be the principal object of your care. Ever since literature and poetry existed, he has been the object of praise for his strength, symmetry, speed, and docility. He is the companion of man as well as his servant, and his qualities have always commanded our interest and admiration. I do not think that the horse, as compared with other animals, has a very high degree of general intelligence. His capacities are limited in direction, and confined, for the most part, to matters connected with his useful employment. But he makes up

for this by the beauty of his organization, his willingness of disposition, and the admirable way in which he is adapted to the work he has to perform. All he wants is to know what his master expects of him, and he is ready to do it, by an instinct which is part of his nature. No doubt there are vicious horses, as there are vicious men; and for both of them punishment is the best remedy. But this is the exception in one case as well as the other. At least nine times out of ten, when a horse does not do the right thing, it is because he does not understand what is wanted of him; and if he can be quietly shown this by any means, he is only too glad to be put on the right track. You will probably have frequent opportunity as veterinarians, to observe the peculiarities of nervous organization in different animals. They are not all alike in this respect, and a knowledge of their variations in temper, intelligence or excitability, may sometimes be useful in a medical point of view. The indepenence of some animals, the sociability of others, the quickness and impressibility of some, and the comparatively phlegmatic disposition of others, are always interesting things to notice, and, when we understand them, make it all the easier to treat the animal or use him to the best advantage. Even when a horse is sometimes a little capricious or light-headed, I do not think that a very serious fault. It is usually a temporary matter, and when the animal has kicked up his heels a few times he is generally satisfied in his mind and ready to go along quietly for the rest of the day.

But your usefulness as practitioners will not be confined to the horse. You will be called upon for advice and treatment for the other domestic animals. And in regard to all those used for purposes of draft or food, you will have to do with interests of high value to the wealth of the country. Beside the ordinary affections to which these animals are liable, there is a further subject of great importance and scientific interest, which comes directly within the range of veterinary medicine. That is the subject of parasites. These creatures are often the pests of the farmer and the stock-breeder. They are lurking vagabonds and intruders, that insinuate themselves secretly into the bodies of higher ani-

mals. They may be only a source of debility or inconvenience, but they are sometimes destructive and fatal to an excessive degree. There are not many of them, I believe, that infest the horse, and but few that do much damage to the ox; but in the sheep they are sometimes abundant and dangerous, and the pig, as you know, is their favorite stamping-ground. They are microscopic in size, and often difficult to detect, because they enter the body by unsuspected channels, and only become dangerous after a time, when they have altered or multiplied in the process of growth. Consequently it is of the first importance to know the beginning of these maladies, and how to avert them at the outset. Sheep-raising is one of the most valuable industries, but it has this drawback; that the sheep is a delicate animal and subject to decimation by various diseases. Two of the worst of these diseases are parasitic—Dropsy-rot, caused by liver-flukes, and the Staggers, caused by cœnurus cerebralis. In England, the Dropsy-rot carries off large numbers of sheep every year, and in the epidemic of 1830 the loss was estimated at a million and a half of animals. In another epidemic one extensive breeder in the isle of Thanet lost $15,000 worth of sheep from this cause; and in France, in 1853 and '54, the farmers lost from a quarter to three-quarters of their entire flocks.

This gives us an idea of how much injury may be done and how much property may be destroyed by the ravages of minute parasites when they become numerous. But the question sometimes touches our interest still more closely. The contamination of our food by the parasites Cysticercus and Trichina makes the infection of domestic animals also dangerous to man. Here veterinary pathology and human pathology come together, and there is a wide field open for increased usefulness of the veterinay art.

Take the case of Trichina Spiralis. That parasite was first discovered many years ago as an inhabitant of the human muscle. But it was thought to be harmless, because it was only found in patients who had survived the original attack and had died years afterward, from some other cause. The fatal cases were not understood, and were not even recognized at all, as produced by the parasite. But at last, by a series of laborious

experiments and observations, it was ascertained where the parasite came from, and how much damage it was capable of doing. This is one of the cases where the most important thing of all is to know the *cause* of the difficulty, because then we can guard against it. Before 1860 we were constantly exposed to a revolting and dangerous disease, without any means of protection. Now that we know where the infection of trichina comes from, we are perfectly safe, if we will only be careful about the preparation of the food, and be sure that it is properly cooked.

But there are always people who will not be careful, and even many who are still ignorant of where and what the danger is. And something yet remains for all of us to learn about it. We know now that a man gets his trichina-disease from eating the uncooked flesh of a trichinous pig. But where does the pig get it? If pigs ate each other, or devoured men, we could understand how the breed of trichina might be propagated. But they do neither. Suppose there are now, in the United States, 20,000,000 pigs, and that 100,000 of these are trichinous. At the end of five years from this time, not one of those pigs will be alive; and yet it is abundantly certain that there will be just about as many trichinous pigs then as there are at present. Now from what possible source can these new animals, not yet born, derive their infection? It must come from somewhere; and if we knew its source we might, perhaps, prevent it, and thus strangle the disease in its breeding-place. But we do not know. There are surmises on this subject, but no real information. The man who ascertains this important fact will do a benefit to his country and a credit to his profession.

This brings us to another topic which has been growing for some years into great prominence. That is, the subject of Preventive Medicine. It is the business of all practitioners who have to do with diseases of either man or animals, not only to cure these diseases, but also to guard against them. We are able to do this just in proportion to our knowledge of the natural history and especially the causes of a malady. The value of this knowledge becomes very evident when we think of the interests of the community in general, or even of large owners or breeders of

stock; and also of the loss caused by epidemics. For the owner of a single sick or lame horse, it is most important that his animal should be cured of that particular malady. But for the country at large it is of much more consequence to prevent its recurrence, or to avoid its coming as an epidemic. In all contagious or infectious diseases this is especially important; and in performing such a service veterinary medicine will do its greatest amount of good.

There is a vulgar notion that to prevent disease would be against the interest of the veterinarian, because it would lessen the number of his patients. I need hardly ask you to repudiate this idea, not only because it is degrading, but also because it is false. A man would more gladly pay for keeping all his horses and cattle sound, than for curing some of them after they are sick. There is no danger that the owners of animals will not always need the advice and skill of the veterinarian. Diseases of all kinds, and especially epidemics, are a disaster to the animal wealth of the country. They diminish the number of valuable animals, and interfere with the prosperity of their owners. It is for the interest of veterinarians as a class that the production of horses and cattle should be abundant; and the more numerous and valuable these animals are in a country, the more important and remunerative will be the business of the veterinarian. Beside, the more good veterinary medicine shows itself capable of accomplishing in this respect, the higher will it stand in the estimation of the public; and this alone cannot fail to increase the consideration and prosperity of its practitioners. What we call preventive medicine and conservative surgery are acknowledged to be the highest practical applications of the medical art in every department.

Finally, gentlemen, let me offer you a few suggestions as to your own future prospects, and what will be most likely to ensure your success. I presume of course, that you have made good use of your time here, that you expect to keep on learning hereafter, and that you are sincerely devoted to the business you have chosen. All these things are essential, and I take them for

granted. But, furthermore, I believe there are two things upon which your future success will mainly depend.

The first is, the *accuracy* of the knowledge which you acquire on any particular subject. There is a great difference in this respect. One man will learn a thing and remember it pretty well in a general way, but without having any very definite idea of the particulars. Another will do it so that he knows exactly how much he has learned, and what the evidence of it was, and what are the figures and quantities essential to the result. He knows precisely where his information on that subject begins and where it ends; how much of it is certain and how much doubtful. Now that is the only kind of knowledge that will be of much use in the long run. It is harder to acquire, of course; but it is worth a great deal more after you have got it. And where two men come in contact, if the knowledge possessed by one is indefinite and that of the other exact, there is no doubt at all which of them will carry the day. Natural quickness or facility of apprehension is a good thing, but it will not compensate for the want of precise knowledge. It is better to make a mistake and have a good reason for it, than to guess right not knowing why. And the reason is that when a man with the right kind of knowledge makes a mistake, he finds out that he has made it, and what is more, he knows why he made it, and just where the difficulty was. Such a man is always improving; and at the end of ten years, in the slow race for superiority, he will have passed his clever competitor and left him out of sight.

The second quality which is of most value for a practitioner, and for his patients too, is what we call a *good judgment*. In common parlance, it is spoken of as a "level head." I do not know how that phrase originated, but it conveys the idea extremely well. It means the power and habit of appreciating what is really important in a thing and what is not; of paying attention to what a thing is, rather than to the name it goes by; and of distinguishing, among several causes, which is the real one, and which are only incidental. The man who does this takes hold of his business by the handle, and will probably accomplish something; because the result he gets, if he succeeds

at all, is the one he set out for. When you are called to see a patient, there are always a variety of things that may be the source of his malady, and you want to know, as certainly as possible, which is the one at the bottom of it. During the course of the disease, it is often of great consequence to know whether a new symptom be really a dangerous one, or only due to some temporary irritation. If you can decide this correctly, of course it will make a great deal of difference in your treatment and in the result. This quality depends in some measure on natural capacity; but it also depends on the habit of taking everything as it comes without examination, or of looking to see what is the cause of it, and what it means. The man who exercises his judgment in this respect gives the patient the benefit both of his knowledge and his skill. The man who does not, is what they call a "routine practitioner." He goes by rote; and he is like the books that some people keep in their houses, such as *Gunn's Domestic Medicine*; or, *Every man his own Cattle Doctor*, where all you have to do is to look out the title of the disease, page 104, and then give the physic put down as good for it. The healing art cannot be practised in that way, either on animals or man.

Not long ago I heard a story of this sort. There were two friends, Dr. A. and Dr. B. Dr. A. lived in the town and drove his buggy. Dr. B. lived in the country and generally went on horseback. Dr. A. was well read and tolerably popular, but he had great confidence in his friend's practical skill and discretion. So once, having a patient very ill with dysentery, he sought the advice of Dr. B., who happened to be in town; saying that he had given the patient several doses of cathartic medicine, but without good effect. Dr. B. said he thought opium would be a good thing to administer, and so it proved, for the patient got well under that treatment. A year afterward Dr. A. had another bad case of dysentery, and again called Dr. B in consultation. He said the patient had been taking opiates for some days, but was still growing worse. Dr. B. advised castor oil. "Well," said A., "I'll give it, if you say so. But last year, when I had a case of dysentery, you told me to stop the cathartics and give opium.

Now you tell me to stop the opium and give a cathartic. Really, I don't understand that, and I wish you'd explain."

"Why," said B., "you remind me of my old horse. A while ago, in the month of April, I had been away some eight or ten miles to see a patient, and passing a brook on my return, thought I would give my horse a drink. It had been thawing and raining then for a fortnight. The road was a bed of mud, and the track down to the brook a perfect slough of despond. However, I picked my way down, leading the horse after me. But he was heavier than I, and sunk in the mud. Then he began to struggle and went deeper at every step; and at last he gave it up and sat down on his haunches, completely mired and half frightened to death. I had to wait till a man came along to help me, when we lifted the animal out with a couple of fence-rails and got him on his legs again, and I took him home. That was three years ago. Last December I had to visit the same patient again; and coming back by the brook, again thought I would water my horse. There was no snow in that part of the country, and it had been freezing hard for a fortnight. The road and the track down to the brook were like so much granite; and the brook had a narrow edging of solid ice, with a little stream in the middle, about six inches wide. As I was leading the way down, I felt the horse bear on the reins, and, looking back, I saw him planted there like a rock. He declined to come any farther, and all my pulling would not make him stir an inch. That puzzled me, until I recollected what had happened at the same place three years before. Then I made a speech to the animal, and expressed my opinion of him in these words: 'Old horse,' said I, 'it strikes me that you have a first-rate memory, but an infernally poor judgment.'"

I believe his friend did not ask him any more, why he treated those two cases of dysentery in a different way.

Now, gentlemen, I will not keep you waiting any longer. I only have to offer you, in conclusion, my thanks for your attention, and my good wishes for your future success.

This address being received by warm applause, Prof. J. W. S.

Arnold, M.D., of the University Medical College of New York City, was introduced, and delivered the following remarks:

It gives me great pleasure, gentlemen of the American Veterinary College, to say a few words on the present occasion. Perhaps I am influenced in your favor, for the reason that so much good physiological work has been done in veterinary schools, by *veterinary men.*

But though the physiologist is especially interested on this account, the profession of *medicine generally must* also appreciate your vocation. Veterinary science is undoubtedly a branch of medical science, and not only does its influence extend to the preservation of the domestic animals used as "*beasts of burden*," but also to those upon which omnivorous man depends so largely for his food.

The physician prescribes for his patient, both the administration of drugs and medicines and by carefully regulating his diet; now, then, a part of *your* profession is to preserve and improve the healthy condition of edible animals: in this manner do you perform *your part with* the physician.

You have entrusted to your care the wealth of a large portion of the community, inasmuch as it forms a part of your duty to prescribe for the diseases of all kinds of live stock. You must diagnose, treat and prognose for your mute patients just as the physician does for his fellow man. It is your part to take cognizance of epidemics, endemics, contagious and infectious diseases, and in fact to look carefully after every form of disturbance in the lower animals which can be transmitted from one species to another, and from these even to man himself.

Thus it is for *you* to perform the work of sanitarians. The community at large should then acknowledge the position which you occupy, and it is for you, gentlemen, to gain its full confidence and respect by your own actions—by your own achievements. The tendency of medicine in our country seems to be towards the direct accomplishment of practical results—the desire is to cure. There is but one way, however to reach our goal, there is but one way to further the interests and increase the proficiency of

medical science. We cannot resort to a mathematical solution of our problem, nor is it possible to foretell the effect of a new remedy (or sometimes of an old one).

Who would expect to repair a delicate and complicated piece of machinery without first becoming thoroughly familiar with its construction, purpose and all that pertains to it? The chances are that the unqualified mechanic would utterly fail in any such attempt; but the skilled artisan would discover without fail the missing or broken part, and by appropriate means restore the mechanism to its original condition.

The same principle holds good in medicine; a knowledge of anatomy, chemistry and physiology must first be obtained; then, upon these three foundation stones can the structure be reared. But yet, as our edifice of medical science is not by any means perfected—far from it; the building is in need of many additions as well as alterations. During the years of its actual existence it has suffered many changes, its supports and walls have been pulled down and built up again to give it more perfect strength and symmetry.

And yet, we must, upon critical examination, come to the conclusion that our foundation stones are not rightly placed. Anatomy, or at least some of its subdivisions, are almost exhausted, animal chemistry and its near relative, pharmacological chemistry, are but in their infancy, and physiology, although beginning to take its place among the foremost departments of medical science, is still an unfinished pillar in our edifice. To the advancement of *experimental medicine* must be looked for the greater perfection of *practical medicine.* The rehearsal of cases, which crowd our medical journals, do little or no good to the cause; the fashion is to hurry into print an account of the first case which comes into the hands of the young practitioner. To what end? Why, to waste paper and ink in most instances. Let it not be inferred from what has been stated, that physiology is the only important branch to be pursued; but may the fact be appreciated that almost every advance in practical medicine has been preceded by some new development in physiology. It is but necessary to glance at what vivisection alone has accomplished, to perceive how errors have

been corrected in the treatment of disease, and new factors introduced, making advances in the right direction.

Before the functions of the portio dura of the 7th pair were known, surgeons used to cut this nerve for the relief of neuralgia.

A knowledge of the circulation of the blood and cardiac movements speak their own importance full well, and what good has resulted therefrom in the cure of disease, and in the amelioration of suffering! The classical experiments upon respiration, the relations of animal life to the surrounding atmosphere, and the mutual dependence of plant and animal, must be credited to the physiological laboratory. Whatever of good has come or may come from the transfusion of blood, should be ceded to Boyle and Lewis, who, more than two centuries ago, performed the experiment upon the lower animals, to determine the propriety of attempting the same in man. Hunter's ligature of arteries for aneurism, and the periosteal reproduction of bone, are but a few of the examples of great principles developed from experimental physiology. Not only does experimentation in this respect establish the groundwork upon which the details may be elaborated, but it suggests another mode of inquiry—the therapeutical effect of drugs and medicines. Ether, chloroform, chloral and many more most valuable remedies have entered the list, after first having their effects tried upon the inferior animals. The problem then seems demonstrated that medical science, as a whole, must look to continued and carefully conducted experimentation for its material advance, and the departments which require to be built up most are animal and vegetable chemistry, physiological therapeutics, with experimental physiology generally.

We require a knowledge of how remedies act in the body, both in disease and in health, for the means of diagnosis of disease are far in advance of the treatment of the same. The fact of the treatment of disease in the lower animals seems to suggest the propriety of experimentation in the directions just indicated, and the truth is spoken when the statement is made, that some of the most important and brilliant discoveries and researches have been in Veterinary institutions. The schools of Lyons and Alfert have already done much to advance medical science. Such names

as Chauvreau, Bertolus, Laroyenne, Colin and Banvillet, connected either directly or indirectly with veterinary science, are sufficient to guarantee the high order of intellect devoted to this branch in France, while the Brown institution in London is doing famous work in investigating the diseases of animals under the auspices of Burden Sanderson and Dr. E. Klein.

And now, what can be said of what is being done here in *our* own land to further scientific medicine, or offer inducement to those who are willing to devote their energies to such a noble enterprise? A truthful answer would be of no flattering character, for we shall find that not only the community at large, but those who are in the ranks of medical men, be the horse doctors or man doctors, either take no interest in these higher studies, or being ignorant or indolent, they decry true scientific work because they can see no practical application. This desire for instantaneous practical results is the damnation of true science; the telegraph, the steam engine were not developed by men of commercial minds, but by those who, seeking diligently for knowledge, which is truth, found the precious treasure, and being pure of heart, gave to their fellow men the result of their labors.

There are, however, many of the profession, here with us, who pursue their way in life with the earnest effort to be true scientific men, and may the good example of these serve you, gentlemen, in your professional career, and cause you to cherish science to the best of your abilities. Seek not for practical results too soon, but rather try and add to the facts already at our command, some that are still unknown. The encouragement of science must come from professional men themselves, at least for a time; the non-professional man is unable to comprehend the expediency of money spent on abstract science; he must be educated to see this necessity by those of his professional brethren whom he respects and confides in. You, gentlemen of the Veterinary profession here, have a most fortunate opportunity to do your part in arousing the interest of your clients, because, from the very nature of the responsibilities imposed upon you in curing diseases of domestic animals, you can demonstrate to the commercial mind how necessary it is that Veterinary science should be extended,

inasmuch as by so doing the wealth of the community is increased. Give your support to the establishment of institutions devoted to experimental medicine *here in this country*, in this *city*, and you will be benefitted therefrom, not only directly in your special profession, but in the better sanitary and pecuniary state of the entire land.

A CONTRIBUTION TO THE PATHOLOGY OF THE PULMONARY DISEASES OF THE HORSE.

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As known, the lungs of the fœtus are now filled with air, the air first gaining access to the lungs of the young animal after birth. When authors speak of that condition of the lungs by which they contain no air as atelectasis, they are not exactly correct. By lungs we understand the functioning, that is, respiring part of the respiratory apparatus in which takes place the gas exchange between the atmospheric air and the blood. The alveolæ of the lungs are filled with air, after birth, as well by the inspiration as by the expiration, and only under pathological conditions is the place taken by the air assumed by other masses, as blood, cells, water, fibrin, etc. When the alveolæ of the lungs are filled with blood, we speak of a *hæmorrhagic infarctus*, when they are filled with cells or fibrin, (and the lungs have the consistency (to palpitation) of the liver) of an *hepatisation*, when the alveolæ are filled with water of pulmonary ædema, *hydrops pulmonum.*

It is self-evident, that the filling of the alveolæ of the lungs with blood, cells, fibrin, water, etc., causes a non-atmospheric condition of the same, but that is no atelectasis. *Atelectasis is that*

condition of the lungs by which the alveolæ do not contain any air, or in the place of the air any other elements whatever; in other words, they contain nothing, are collapsed, non-distended. The lungs of the fœtus exemplify this condition, and we therefore name the fœtal condition (État fœtal, Legendre.) of the lungs a *natural atelectasis.*

The aim of respiration is to convey the oxygen of the air to the blood, and to take up from the same the end products of the processes of oxydation, especially the carbonic acid, and give them up to the external atmosphere. The lungs are in connection with the external world by means of the bronchi, the trachea, the larynx, and the nasal cavities. We must then look upon these parts as the respiration's way, the connective-tube between the lungs and the atmospheric air. From this consideration it results that the diameter of this respiratory-way decides how much atmosphere may gain access to the lungs with each respiration. The results of different measurements indicates that the diameter of this connective-tube stands in a certain relation to the size of the lungs, and that the size of lungs stands in a certain relation to the size of the body.

To the completion of normal respiration, a normal diameter of the respiratory-tube is necessary, and every considerable constriction of the same must necessarily produce a disturbance in the execution of the respiratory functions. When this connective-tube is obstructed, the entrance of the air into the lungs cannot take place. Such a condition may take place during the birth of the young animal. The young are forced out by the contraction of the uterus, but at first the uterus does not act upon the fœtus, but upon the liquor amnii. The orificium uteri is distended by that part of the fœtal meninges which obstetricians designate as the "blase" bladder. Later, the head of the fœtus is pushed into the distended orificium, and finally the fœtus is born. The young, while intra-uteral, draws its necessary oxygen from the placental blood of the mother, but this gaseous-exchange between the blood of the young and that of the mother is only possible when the way by which the blood passes from the mother to the fœtus, and *vice versa*, is unobstructed. As soon as the young is born, also

when the union with the mother by means of the funiculus umbilicalis still continues, the supply of oxygen from the mother ceases, on account of the contraction of the uterus; the contraction of the uterus conditions a compression of the vessels. A proof of the correctness of this assertion, is given by the observation that the fœtus begins to respire, and aspires the liquor amnii, if the fun. umbilicalis be compressed. The supply of air to the lungs is only possible, however, when the passage to the same is open. When the last is completely closed, no respiration whatever can take place, and the young dies during or at once after birth. If parts of the respiratory-tube are obstructed, then the young cannot breath with the parts of the lungs in connection with same, such parts remain empty *atelectatic.* This is *con*-genital atelectasis, that is, the lungs or single sections of the same remain in the fœtal condition.

The mechanical acts of respiration are also important in considering the process of respiration. These are the respiratory movements. Different powers serve to perform the business of in- and expiration, to which it is necessary for us to give a moment's attention. The lungs lie in relation with the inner surface of the thoracic parietes. When the thorax widens, the lungs distend themselves, and the distention of the lungs exactly corresponds to the extension of the thorax. A dilution of the air in the lungs must then take place in consequence of the extension of the thorax, and the succeeding distension of the lungs, upon which follows an in-streaming of the external air by means of the respiratory-tube. This in-streaming of the external air in the lungs continues until the equilibrium, or, as Donders remarks, until an equal tension of all the alveolæ, and an equal distribution of the pressure to all parts has taken place. The lungs do not, therefore, deport themselves by inspiration in an active, but in a passive manner; they are extended by means of the atmospheric pressure, and resist the same by means of their elasticity. This resistance, which the pulmonic tissues offer to the atmospheric pressure; that is, the endeavor of the lungs to contract or retain themselves in their natural volume, is called the *negative pressure.*

The inspiration is interposed by means of muscular force, the

following muscles taking especial part in this phenomena, viz: the diaphragma, the scaleni, the inter-costales externi and interni. Expiration takes place without the interposition of muscular force; the most essential expiratory force being the elasticity of the pulmonic tissues themselves. The inspiration's muscles relax, and the lungs which have been distended have, on account of their own elasticity, the tendency (endeavor) to again assume the volume they had at the time of the last completed expiration. While the elasticity is a hindrance to the inspiratory extension of the lungs, it is the chief motor in the performance of the expiratory act. The endeavor of the lungs to contract themselves, has not by any means ended with the termination of the expiration, as we shall presently see.

As the inspiration is affected only by means of muscular force, it must then essentially depend on the condition of the muscles for inspiration, whether on coming into the world the young animal can sufficiently widen the individual sections of its thorax or not. *Unfortunately, we do not at present possess any satisfactory measurements of the excursions of the single sections of the thorax.* Experience has, however, taught us that sections of the lungs, of more or less extent, remain in a fœtal, that is atelectatic, condition, when the inspiration's muscles do not sufficiently work after the birth of the young; that is, all parts of the lungs are not equally extended.

Roloff found by young pigs immediately after birth, and even by not yet developed fœtus, the entire straited musculature in a condition of fatty metamorphoses; consequently in a condition unsuitable to perform its functions. These animals could only inspire imperfectly, or not at all. Many animals therefore perished at once, or soon after birth, in consequence of insufficient respiration. The lungs of the dead animals appeared, as a rule, in desiccated atelectatic condition, ("in der Regel trocken.") The lungs will then remain in a fœtal condition: 1st. When the inspiration muscles have suffered pathic metamorphosis, and every extension of the thorax is impossible; or, 2d. When the respiratory tract, the connective-tube between the lungs and the external air, is obstructed. The nature of the changes of the inspira-

tion muscles, and the more or less complete obstruction of the respiratory way, would therefore decide the extent of atelectasis. Have single inspiration muscles suffered pathic changes of an inferior grade? then the respiration is only partially disturbed. The lungs are then only atelectatic here and there. Or, are only individual bronchi obstructed, that is, the connective-tube is only partially obstructed? then the atelectasis would only come to observation in those parts of the lungs to which the bronchi in question lead. We find the obstruction of single bronchi by *congenital bronchitis catarrhalis.* I have to the present time met with bronchitis congenitalis only by calves, and would infer (with Frank) that the aspiration of the liquor amnii may be looked upon as the cause of the same. Every bronchitis gives a secrete. The number of diseased bronchi may vary, and corresponding to the same would be the extent and number which would be obstructed. The atelectasis following bronchitis is not alone conditioned by the secretory products, mucous, pus, etc., but other circumstances all aid in producing it. Every irritation of a mucous membrane causes tumefaction of the same, and this swelling is of itself sufficient to obstruct the lumen of very narrow canals lined with a mucous membrane. Further, the functional capability of the respiration muscles is of importance. When the respiratory forces are sufficient to cause the extension of the thorax of a new born animal, then the hindernesses to the respiration caused by the catarrh may be overcome, by the powerful respiration. By a weak animal, however, the musculature of which is but poorly developed, poorly nourished, or has suffered pathic metamorphoses, that is, one by which the act of respiration is but weakly executed, the obstructions of the bronchi cannot be overcome. It is by such animals especially, that the lungs remain to a greater or less extent in a fœtal condition. The last is known as congenital atelectasis. Congenital atelectasis was for a long time looked upon as a congenital form of pneumonia. Jorg was the first to correctly consider the atelectatic condition of the lungs and to recognize the same as the result of an insufficient filling of the alveolœ with air.

Against this congenital form of atelectasis we have the acquired.

This comes to—comes in a lung which has already breathed, and in such places in which the supply of air has been shut off. The mere interruption of the supply of air is not, however, sufficient to make a part of the lungs atelectatic of an animal which has already breathed; in this case the obstruction of the respiratory canal is only a condition to atelectasis. The latter will first come to pass when the air posterior to the point obstructed is removed. The removal of the air takes place as follows:

By the fœtus the lungs are in an atelectatic condition, that is, the alveolæ and bronceoli are so much collapsed that the parietes of the same are in opposition with each other. Authors have, in times past, considered that the alveolic tissue was made up only of connective tissue and elastic fibres, and that muscle fibres were only to be found in the bronchi. Moleschatt and Piso Borne have, however, shown that non-striated muscle fibres also enter into the construction of the parietes of the alveolæ. F. E. Schulze has described at length the distribution of the same in the lungs. From this anatomical construction of the lungs, it results that the latter are not alone elastic, but also contractile. The part these muscle-fibres play by the expiration is as yet undecided. Brücke says, "*the quiet expiration results through elastic force.*"

Upon the lungs we distinguish the highest state of inspiration and the most profound state of expiration. In the first the thoracic cavity and lungs acquire their greatest extension, and the lungs their most extreme amount of air. The most profound state of expiration is exactly the opposite. In this the lungs are but poorly filled with air, but they are not completely empty, by any means. The lungs of the cadaver are in the most profound state of expiration; in this condition they also have the tendency (endeavor) to still more contract, but the further contraction is hindered by the thoracic parietes. The most profound state of expiration is therefore no atelectasis. It makes no difference, therefore, in which moment of the in- or expiration the supply of air is interrupted by the obstruction of the air passage, as of a bronchus; in every case a part of the lungs filled with air would be shut off from the general air circulation in the lungs. In the course of time the air disappears from the excluded part of the

lungs, and then the latter becomes atelectatic. The question now before us is: How does the excluded part of the lungs get freed from its air? Here works the repeatedly quoted elasticity of the pulmonary tissues. The air in the excluded parts of the lungs finds itself under a constant pressure, and this conditions the absorption of the air.

Virchow was the first to advocate the view, that the air in the excluded parts of the lungs was absorbed by the fluid present in the same. This absorption process takes place here in the same manner as in the intestines. The absorbed air gains access to the blood, and is rapidly passed off by means of the lungs, as Bernard has shown. According to Traulee, nitrogen is not easily absorbed by the blood, and it appears as if the nitrogen in the intestines gained access to the blood easier through the mucosa of the same than by serous membrane, that is, the lungs. Investigations have shown that the air in such excluded parts of the lungs is at first always poorer in oxygen and richer in carbonic acid, and that then comes a period when only carbonic acid and nitrogen are to be found in the parts in question, and that finally these gases also become absorbed, the carbonic acid quicker than the nitrogen, however. The tonus of the tissue is one of the most important conditions for the absorption of the gases. Opposed to the tonus is the atonus, and both conditions are dependent upon the inner construction of the tissues. Authors, in times past, have designated these conditions of the tissues with "strictum" and "laxum." Tonus has reference to the dense and firm condition of well nourished parts. Tonus, says Virchow, is the character of a healthy, normal part, where the favorable condition bespeaks also a large amount of activity. The property of a part to retract itself, is known as its elasticity. Pulmonary tissue is able to retract itself, when in a good condition, powerfully and quickly; under the contrary circumstances, slowly and imperfectly. The lungs may lose their capability to retract; in such a case we speak of a collapsus of the lungs. *From this it is evident that atalectasis of the lungs must not be confounded with collapsus. A lung can only become atelectatic when it has the ability to retract itself*, that is, when it is elastic; it is only parts which have this ability which

can become atelectatic, after their supply of air has been shut off from the obstruction of a bronchus. The retraction of the lungs is an active process, which presupposes a normal character of the pulmonary tissue. Collapsus, however, indicates to us that the pulmonary tissues have lost their elasticity; by collapsus the lungs are in a passive condition. A healthy lung retracts by opening the thorax, and, indeed, because it is elastic; when this falling together (retraction) does not take place, then the air cannot get free from the lungs, because of the obstruction of the entrance, or because the lungs are in a state of collapsus. We must assume a pathic condition of the pulmonary tissue by collapsus, but this condition is not to be demonstrated anatomically. Only the disturbances in the physiological conditions of the lungs justify us in assuming disease of the parenchyma of the same. We cannot demonstrate, on such a lung, the normal crepitation which results by a normal elasticity of lungs, when we cause a slight compres sion of the air in the same.

The grade of elasticity of the lungs varies at different ages. The general results of experience are that the lungs of young animals are more elastic than those of old ones. The elasticity of the lungs diminishes with quantitative and qualitative use of the same; this fact explains to us why atelectasis develops more quickly by young animals, and is more frequently observed by the same, than by old ones.

According to Bartele, an obstructed part of the lungs becomes free from its enclosed air not only by means of the elasticity of its tissues, but also with the assistance of the bronchial muscles. It is his idea that the irritation of the bronchial mucosa causes a reflex contraction of the musculature of the same, and that this contraction accelerates the absorption of the air. Experience teaches that bronchitis catarrhalis is frequently followed by atelectasis, when the product of the bronchitis obstructs the lumina of the bronchi. This obstruction comes to pass more freely upon some bronchi than upon others. The primary reason for this is to be sought in the manner of construction of the thorax. The respiration by the horse is predominantly diaphragmatic, and the excursions of the ribs become greater in an anterio-posterior

direction, that is, from forward, backward. In general, however, the costal extension of the thorax is very small in comparison to the influence exerted upon the dimensions of the same by the diaphragma. The thorax will be extended the least, on such part, when it has the least elasticity and flexibility. Accordingly, the anterior and middle part of the same will suffer the least extension by inspiration; this is partly due to the arrangement of the ribs and partly to the hindrance to the same offered by the attachments and influence of the anterior extremities. If, therefore, the development of a catarrhalic secrete—mucous and pus—in the bronchi has taken place, the same will self-evidently accumulate in those parts of the lungs which are least agitated and extended by inspiration—the anterior and middle parts. In the inferior middle section of the lungs, or, according to Leisering, "where the inferior edges extend furthest downwards," an obstruction of the bronchi will most easily take place; because the secrete follows the laws of specific gravity, and must, therefore, sink to this, the lowest part. Aside from the form of the thorax, and the situation of the single sections of the lungs, *the character of the inspiration muscles is of importance.* This has been already considered. In proportion as the activity of these muscles is interfered with, so much the less will be the extension of the thorax, and this will be more apparent in regions where the normal excursions are the least. Therefore, *atelectasis will naturally take place after a bronchitis in those parts of the lungs where expectoration is mostly interfered with, that is, where obstruction of the bronchi can most easily take place.* We thus see that an acquired atelectatic condition may have a variable extension. A lobulus, or a part of the same, may be complicated; and, indeed, lobular atelectasis follows bronchiolitic catarrhalis, while partial lobular atelectasis follows a broncho-pneumonia. By the last the complication of the bronchi is the protopathic, while the complication of the lungs is the deuteropathic process; the process creeps from the bronchi to the alveolæ of the lungs. By broncho-pneumonia, the alveolæ around the bronchi are diseased, the central part of the lobulus suffers, while the peripheral remains intact. If the broncho-pneumonia processes lead to a long con-

tinued obstruction of the bronchioli, then the peripheral parts of the lobuli become atelectatic. The surface of the lungs then loses its smooth appearance. By pressing the fingers over the parts in question, we are able to feel the broncho-pneumonia centra, as small noduli. Each nodulus shows on transverse section a yellow point (centrum) which corresponds to the point of entrance of the bronchiolus.

Experience has taught us that post broncho-pneumonia atelectasis develops by animals which do not breathe sufficiently, that is, by poorly nourished and animals weakened by the processes of disease. The bronchiolitis and the alveolar catarrh give the material for the obstruction of the bronchioli, and the insufficient respiration is the cause of the obstruction. The product given by a catarrh of the part of the lungs in question is movable, consequently capable of expectoration; but the insufficient respiration is the reason why the bronchioli and the alveolæ around the same become filled. In this filling is to be sought the condition to the development of atelectasis.

Atelectasis may also embrace greater sections of the lungs; the above-given data are amply sufficient to explain the reason for the same. The diaphragma is the most important inspiration's muscle. Meteorismus and ascites must therefore exert a disadvantageous influence upon the respiration. These conditions force the diaphragma forwards, and therefore make the respiratory surface smaller and render the movement of the diaphragma difficult. Experience has taught that either of the above, of themselves, do not disturb the respiration to an excessive degree, but that dyspnœtic phenomena become apparent, when disturbances of the respiration were already present. I will not here give the reason for my assertion, but will only mention that I can prove their correctness on the dog. Dogs demonstrate scarcely any dyspnœa, by a frequently very extensive tympanitis, *i. e.* such which follows or accompanies peritonitis.

But as soon as with the tympanitis, bronchitis is developed, they demonstrate very severe dyspnœtic phenomena, even when the bronchitis has only attained a small extension. In these cases the dyspnœa stands in no proportion to the grade and extension of

the bronchitis. Tympanitis and ascites are further dangerous in that they favor the genesis of atelectasis. An indiopathic bronchial catarrh develops no atelectasis by old animals, even when the bronchioli are complicated, and a viscid mucous is secreted, the normal performance of the inspiration muscles hinders the development of bronchial obstruction. But atelectasis is, however, developed, if tympanitis or ascites are present, or become present during the prevalence of the inflammatory processes in the lungs. The latter cause a shortening of the longitudinal diameter of the thorax, they extend the diaphragma, and consequently exert a disadvantage influence upon the processes of inspiration; they render the alveolis spaces smaller, compress the bronchi, and hinder the entrance of air into the same. Atelectatic parts always take up less room than those parts of the lungs filled with air. In a lobulus atelectatic it will be found to lie below the level of the remaining air containing parts of the lungs. The pleura covering an atelectatic piece of lung shows no changes—it is smooth and transparent. Small sections of atelectatic pulmonary tissues sink if thrown into water. Atelectatic tissue does not crepitate on cutting, it is dry, and its cut surface smooth; such parts are dark or blue red in color, hyperæmic. Pulmonary tissue filled with air is of a delicate pink color, on account of the latter distribution of the blood through the distended tissue, and the opportunity given for its more perfect oxydation. An atelectatic portion of a lung must therefore have a dark red color, even though it contains no great quantity of blood; the part is retracted and the blood limited to a smaller space. The blood in such parts is at the same time more veinous because no oxygen gains access to the same. The capillaries of such parts are distended on account of the cessation of the intra-alveolic atmospheric pressure.

When a part of a lung becomes atelectatic, it is alone a consequence of retraction. If we open the thorax of a cadaver, the lungs at once fall together the moment the external air enters the thorax. The lungs are in a full condition of retraction, which can only take place, however, when the dispersion of the atmospheric pressure upon the inner (respiratory) and external surfaces

of the lungs is equal. The falling together of the lungs on opening the thorax is also the consequence of retraction, the elasticity of the lungs exerting an equal influence with the external atmospheric pressure. We know that expiration results without the employment of muscular force; it results from the endeavor of the ribs to return to their state of a quiescence, though the pressure executed by the intestines which pushes the diaphragma forwards, through the relaxation of the inspiration muscles, and from the endeavor of the elastic lungs to make themselves smaller. Muscular force is only exerted by forced expirations in order to contract the thorax, the intestines are thereby compressed, the diaphragma pushed forwards, the ribs drawn forward. The lungs of dead animals represent a condition of expiration which is not forced. This state of expiration corresponds to that grade of retraction which is possible by an intact thorax.

With the opening of the thorax is produced that equilibrium between the internal and external atmospheric pressure which we have previously considered; hereby the elasticity of the lungs becomes again active and causes a full retraction of the same. The lungs, when removed from the cadaver, exemplify this condition, on condition that they are elastic, and the respiratory tube is not obstructed. Both are stadia of the same mechanical process; in both the lungs still contain air. We must also distinguish between atelectasis and a full condition of retraction. This latter condition is caused by the equal distribution of the intra and extra pulmonic atmospheric pressure. If I decrease or remove the intra pulmonic atmospheric pressure, I then make it possible for a further retraction of the tissues of the lungs, which may finally produce atelectasis. Atelectasis is then the retraction of the pulmonic tissues until they contain no more air. The process upon the lungs is not a pathological one, it is a known physiological act, which has only appeared in an abnormal grade. Not the process, but the grade of the same is pathological.

What is then compression of the lungs?

The lungs or parts of the same may be compressed intra vitam by water, blood, fibrin, pus, tumors, etc. The fluid cet. par. assumes the lowest part of the thorax, therefore the lowest parts

of the lungs are the ones most frequently compressed. The extent of the compressed parts of the lungs depends self evidently on the quantity of fluid accumulated in the thorax. The grade of compression is dependent in part on the quantity of fluid, and, in part, on the duration of the action of the same upon the lungs. In weak grades of compression the lungs are only relieved of their atmosphere. The compressed part resembles an atelectatic part; it is dense, dry, hyperæmic, smaller than at the time of expiration, and upon transverse section the surface appears smooth. *In the extreme grades of compression, however, the parts complicated appear anæmic, it is no more hyperæmic but (by horses) appears almost white or bluish-white.*

Two conditions act by compression: 1. The external pressure; 2. The elasticity of the pulmonary tissues. During the expiration the lungs retract themselves until they attain the previously mentioned condition of expiration. The latter is that grade of retraction possible with an intact thorax. If I introduce a substance between the walls of the thorax and the lungs, I make it possible for the lungs to still more retract by means of their elasticity. In this case I do not decrease the intra-alveolic, but increase the extra pulmonic pressure. The grade of the pressure decides the amount of retraction. The pressure at first relieves the lungs from their air, and later the blood is also forced out of the same.

The elasticity of the lungs is the reason why they lose their air as well by atalectasis as by compression, but by the first the elastic action begins with the decrease of intra-alveolic atmospheric pressure, by the last with the augmentation of the extra pulmonic pressure, let the cause be air or what it will. The anæmic condition, which is apparent by the compressed lung, is not due to the elasticity of the same, for it is caused by the pressure of the fluid upon the already atelectatic pulmonory tissue.

(*To be continued.*)

PARENCHYMATOUS AND INTERSTITIAL INJECTIONS.

By J. C. MYERS, Jr., D.V.S.

Read before the United States Veterinary Medical Association.

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Concerning this important method of surgery, which is occasionally mentioned in the practise of human medicine, we really can find but little or nothing in veterinary literature, so that it may be quite proper to draw the attention of the veterinary fraternity to the advantages that can be obtained in the surgical department with the injection of medicines into the intimate structures of the afflicted tissues. Their local effect depend much upon the affinity between the certain agents injected, and the character of tissues it is intended to act upon. In accordance with this view of *modus operandi* the desired effect must be obtained by the most suitable agents in the treatment of the disease. If it be a phlegmonous tumor, a powerful irritant or suppurant is required, to set up a violent inflammation with a view of breaking down the enlargement into pus, and, when discovered, evacuated. If, on the other hand, there is a lack of vitality in the tissues or blood-vessels, producing atrophy of the connective tissues, a gentle stimulant is required, to excite the cells merely sufficient to produce an undue cell activity without driving it far enough to break the cells down into pus. This design is simply to reanimate their impaired functions. A lack of nervous force is also aroused by these and similar agents. But when there is an excess of nervous irritability, as in neuralgia, the reverse class of remedial agents are indicated to combat the disease, such as anæsthetics, anodynes, and the like. Again, there may exist a hypertrophy of glandular or osseous structures where no abscess is anticipated. In these cases absorbents are the choice agents. We often seek to establish healthy action in some malignant forms of disease. With this view we adopt as a portion of the treatment, the interstitial administrations of antiseptics, as in gangrene, anthrax, and anthro-coid diseases, where its efficient validity can be thoroughly tested. There is also another class of

medicines employed, in this or a similar way, for aneurism, by injecting coagulable material into the aneurismal sac, no doubt with some very favorable results. However, I scarcely think for this latter pathological condition the injection could be regarded as interstitial; nevertheless, it is deep.

The most frequent cases met with where this method of local medication could be employed is, in treatment of sluggish tumors and deep-seated abscesses. The advantages of proper agents injected into the intimate structures of the enlargement, over the external applications hitherto employed, are considerable. A case of chronic abscess under the levator humeri muscle at the base of the neck can be treated in a comparatively short space of time by the introduction of ʒ ij cantharidal collodion repeated about every third day until pus is brought to the surface, lest a violent reaction supervenes, characterized by an enormous swelling, which must be dispersed by warm bathings and appropriate lotions before another injection can be made. The changes the tumor undergoes are marked and manifested. The enlargement itself is considerably aggravated. The adjacent structures become swollen. In twenty-four to forty-eight hours the swelling sinks downwards towards the sternum and into the anterior extremity. The tumor proper is again circumscribed, probably larger, and of a more inflammatory type. In some cases the presence of pus might be detected by the fluctuation at some prominent spot. Very often, though not necessary, this at the entrance of the needle, though this puncture is usually entirely closed. If pus is detected, evacuation would next be in order; if not, another injection is indicated, not regarding the point where the original puncture was made. The operator should continue on with the injection about every third or fourth day, until indications of pus are apparent, when it should be eliminated by a bold incision. This usually reveals the presence of two cavities; one, superficial, immediately beneath the skin; the other, deep, behind a fleshy, sometimes cartilaginous partition, separating the two cavities. This septum in turn must be pierced with a probe-pointed bistoury or the index finger, to furnish an exit for the deep-seated pus—that being the important cavity. Usually the

pus is of a thick, laudable white appearance, or in rare instances, singularly indeed, of a thin black, sometimes floculated character. This discoloration is due to some pigmentry deposition. The class of abscesses above described are extremely tedious in their healing progress, which can be attributed to a melanotic cancerous diathesis the patient labors under. These are most prevalent and, indeed, almost exclusively confined to grey horses. It sometimes happens that the portion of the tumor anterior to the partition wall does not liquify, but leaves a fibrinous mass to be disposed of by the aid of escharotics. These are to be introduced after the deep cavity is plugged up. The most preferable caustic is a saturated solution of granulated chloride of zinc. Arsenic or corrosive sublimate may also be applied, but they require more time for the separation of the slough, thereby lengthening the progress of the case. Caustic potash is by some a favorite escharotic, but on account of its rapid deliquescence there is danger of injuring the integument over which it is apt to flow. This disadvantage ought to be guarded against in the use of all caustics by anointing the neighboring integuments with melted suet or wax, which prevention is far easier to accomplish than the healing of the excoriations and replacing the denuded hair. The plugging of the deep cavity, which ought to be done daily, is most conveniently and safely accomplished with a strip of worn linen saturated with carbolized oil. By this means we avoid the danger of the plug of oakum or cotton breaking and being retained within the cavity.

The author of this paper has practised interstitial injections with various agents for chronic abscess under the levator humeri muscle. The most dangerous of these, if irrationally employed, is a combination of croton oil and ether. The action of this remedy in some cases proved very alarming by producing a vehement inflammation extending over the whole visible anterior cervical region, and down through the pectoral region, causing considerable anxiety to the employer, myself, and patient. In one case gangrenic abscesses supervened throughout the pectoral and inferior cervical region, placing my patient in immediate danger of septicæmia. This result led me to discard croton oil as an

interstitial suppurant. The adjuvans (ether) forming a solution with the croton oil, by its rapid permeating influence amidst the tissues, carried the croton oil over a much greater area than intended, which could have been modified by substituting some bland oil. I therefore concluded to adopt a less potent agent for that purpose, which I am still using with flattering success. I refer to cantharidal collodium.

Tinct. cantharides or turpentine with sweet oil were my favorite remedies for a long time. But I uniformly found them unreliable and sluggish in their action. I have also tested the utility of tinct. iodine for quite a period with a view of absorbing the enlargement. In some cases this treatment was successful; in others it failed, but it favored the development of pus, which was more desirable; for I entertain the opinion that a return of the tumor need less be apprehended than if absorption had been achieved; moreover, the progress and final termination may be depended upon.

The *sub-cutaneous* injections of stimulants for atrophy of the scapular region of muscles also bring forth gratifying results towards the restoration of the volume of muscular tissue by employing such agents as will uniformly excite the cell and vascular activity, like alcohol, fusel oil, turpentine, and others. One part of fusel oil and seven parts of sweet oil proved very encouraging in several instances, but alcohol, on account of its rapid permeability, injected at intervals of three to five days, has been my latest selection. These injections should be followed by a thorough palmar friction. Their repetition should be regulated by the subsidence of the inflammation produced by the agent injected. I have also made use of tinct. cantharides, turpentine, and other stimulants, where abscesses ensued. For this complication, until further objectional developments occur, I have chosen alcohol as a local stimulant to the impoverished district of muscular tissue.

The efficacy of the deep injections of anæsthetics or anodynes, such as chloroform, ether and morphia, to allay excruciating pain, has often been achieved by the local saturation of the suffering tissues. This is particularly the case when the pain is not

attended with much evidence of inflammation, as in neuritis, rheumatism, sciatica, etc. I have repeatedly met with considerable success in the treatment of glandular bronchocele, cystic and bursal enlargements, by the injection of iodine solutions into their intimate structures. These injections for cystic enlargements are chiefly advisable after the contents of the enlargement are eliminated by means of a trocar. Especially is this treatment indicated when the cyst is in a region where there is a scarcity of loose fibrous tissue, and devoid of coagulated blood. The writer recently has treated several cases of serous cyst, almost forming abscesses, upon the withers, by the withdrawal of the fluid with a capillary trocar, followed by an injection of a weak solution of carbolic acid in one, and a mild solution of iodine in another, at intervals of four to six days.

In this manner was effected a complete convalescence in about four weeks. This treatment at the same time obviated the embarrassments of a case of fistulous withers. I do not assert that this abortive means of treatment will in all cases of serous cysts upon the withers prove successful, but there certainly can be no objection in resorting to this method of treatment before laying the cavity open with a scalpel. To secure a positive closure of the opening made by the trocar, I apply several layers of cotton saturated with collodion over the spot where the puncture had been made.

The instrument I employ for the interstitial administration of medicines is a simple hard rubber hypodermic syringe, furnished with a long strong needle. It is much safer to insert the needle into the tumor first, then adjust the syringe filled with the liquid to be injected into the meshes of the afflicted district, than to introduce the needle already attached to the syringe. The danger of breaking the needle is thereby avoided, even if the patient should resist during the operation.

The judicious selection of agents, both in quality and quantity, is absolutely essential to convince one of the efficiency established by this mode of treatment. It requires considerable skill and experience to determine the necessary quantity to produce the desired effect. It is decidedly material when the repetition of

the injection is effected, for the succeeding operation must act in conformity with the preceding one.

As brief as this paper is, I hope its contents are demonstrative and explicit enough to enable the veterinary practitioners to energetically advocate the interstitial administration of medicines for the above described affections.

REPORT OF CASES.

RUPTURE OF THE ÆSOPHAGUS—RECOVERY.

By E. F. Thayer, V.S.

West Newton, Mass., June 19, 1863.

I was called to a horse belonging to C. E. Townsend, of Granville, four miles distant. The statement was that the animal was frightened by a straw hat, which was blown off the head of the driver, which caused him to run away, throwing over the horse and cart; the horse could hardly breathe, and the throat was badly swollen. On examination I found an extensive swelling over the region of the fauces, filling the intermaxillary space, and extending downward and backward for six or more inches, the animal breathing with great difficulty. I at once opened the trachea and inserted the tube, which immediately relieved the breathing, and applied a digestive ointment over the swollen part. On the 24th there was fluctuation. An opening was made, and a large quantity of pus escaped. A little green clover was given to eat and in a few minutes I found the grass passing out of the opening made by the lancet. I then ordered that all solid food be discontinued and gruel substituted. On the 27th I again visited the animal, and found that my orders were not obeyed. As the owner was a merchant and absent from home most of the time, I requested that the horse be sent to my place, which was done. I made a pad with tow and chamois to fit the aperture, and allowed a liberal quantity of gruel, which he drank with avidity, but little escaping through the wound. In four weeks he was sent home, the external wound having entirely healed, the food passing down without any obstruction; the animal could trot a lively gait without difficulty of respiration. It was soon found that the fright was a serious matter; that he was afraid of anything in motion, and as an old gentleman (the owner's father), drove him and used him on the place, it was thought unsafe to keep him; he was sold to go into the army. The case was interesting, from the fact that there was no permanent injury to the organs of deglutition or respiration.

EDITORIAL.

AMERICAN VETERINARY REVIEW.

As we announced it in the last number of our first volume, the life of the Review is now a certain thing, and the fear that some of our friends might have entertained towards its permanent success is now a doubt of the past, much, probably, to the discomfiture of a few.

But watching, as we have done for years past, the progress of veterinary medicine in America, and satisfied as we are of the importance of such a periodical, we felt that the mere fact of starting this publication was not sufficient, and that unless marching with the advancement of our science and making improvements in its appearance, we would not do justice to the great patronage we have received. To that effect, and with that object in view, we have taken steps to have the Review increased in size; and we are pleased to announce, that from this first number of our second volume, each month will bring to our readers 46 pages of reading matter. Our correspondents now will not have to wait for months to see their articles published, and our subscribers will thus be always kept posted as to the most advanced progress of veterinary medicine.

A cheap publication is not always the best, it is true, but low price does not necessarily exclude quality—and in this, also, we have made progress. The Review is now offered for $4.00 a year, and will make at the end of the year a nice volume of about 500 pages of interesting reading subjects.

We hope that with these changes Veterinarians of the United States will continue to look upon the Review as the true representative of American Veterinary medicine, and as the means of protecting their professional interest; and in so doing will still give us their patronage and their kind assistance.

VETERINARY COLLEGES.

No one will deny, that if the standing of the veterinary profession is yet so low in the United States, it is not due to the

ridicule which may be attached to the practice of that specialty of medicine, but to the fact that in the greatest majority of cases, those who are engaged in veterinary practice are of the greatest ignorance; or, if regularly educated, have prostituted their professional standing by empirical and charlatanic conduct.

This condition, however, is rapidly coming to its end, and that is, thanks to the establishment of veterinary schools on the continent of North America. These schools have been private undertakings. It has been with them a hard up-hill work, and especially in the United States, where they had to depend almost entirely for their support and success on the energy of a few men, without any Governmental assistance; but nevertheless, their work will forever be marked on the stones of posterity, which will judge of what was good and what was bad in the performance of their labors. In the United States, though several attempts were made to the establishment of veterinary schools, we find, yet, that only two institutions truly came to a certain success. One was chartered in 1857, the other in April, 1875—the second being founded by the working faculty of the former, which was closed in March, 1875. These are now in working condition. While it is gratifying to see these two schools working with the same object in view, it is to be much regretted that the revived school should, by erroneous statement, try to impugnate the legal existence of the other. In some newspapers, and in their advertisements, she claims that she is the only school chartered by special act of the Legislature. This is correct; but why follow it by a misrepresentation of her rights in saying that she is the only one authorized to issue diplomas?

There are in the State of New York three ways by which educational institutions can be incorporated: 1st, by special act of the Legislature; 2d, by authority of the Board of Regents of the University of the State of New York; 3d, under the general law of the State, (laws of 1870, amending Act of 1848). These laws read as follows:

LAWS OF NEW YORK, 71ST SESSION, 1848. CHAPTER 319.

AN ACT FOR THE INCORPORATION OF BENEVOLENT, CHARITABLE, SCIENTIFIC AND MISSIONARY SOCIETIES, PASSED APRIL 12TH, 1848.

The people of the State of New York, represented in Senate and Assembly, do enact as follows:

SECTION 1. Any five or more persons of full age, citizens of the United States, a majority of whom shall be citizens of this State, who shall desire to associate themselves for benevolent, charitable, *scientific*, or missionary purposes, may make, sign, and acknowledge before any officer authorized to take the acknowledgment of deeds in this State, and file in the office of the Secretary of State, and also in the office of the Clerk of the county in which the business of such society is to be conducted, a certificate in writing in which shall be stated the name or title by which such society shall be known in law, the particular business and objects of such society, the number of trustees, directors or managers to manage the same, and the names of the trustees, directors, or managers of such society for the first year of its existence; but such certificate shall not be filed unless by the written consent and approbation of one of the justices of the Supreme Court of the district in which the place of business, or principal office of such company or association, shall be located, to be endorsed on such certificate.

LAWS OF NEW YORK, 93D SESSION, 1870. CHAPTER 51.

AN ACT TO AMEND THE "ACT FOR THE INCORPORATION OF BENEVOLENT, CHARITABLE, SCIENTIFIC, AND MISSIONARY SOCIETIES," PASSED APRIL TWELFTH, EIGHTEEN HUNDRED AND FORTY-EIGHT.

The people of the State of New York, represented in Senate and Assembly, do enact as follows:

SECTION 1. The Act for the incorporation of benevolent, charitable, *scientific* and missionary purposes, passed April twelfth, eighteen hundred and forty-eight, shall be deemed to authorize the incorporation of any society for the purpose of *establishing and maintaining any educational institution, &c., &c., &c.*

SECTION 3. Any *university or college* incorporated under the said Act, or under this Act, may take and hold, by gift, grant, devise, or bequest, &c., &c., &c.

What reads plainer than this? Is the American Veterinary College the only institution which has availed itself of the privileges of these laws? No. The *University of Syracuse* is chartered under the same power. Its literary, legal, theological and medical departments issue their diplomas by the same right; and were ever those degrees contested by any other institution?

Why then deny it to the American Veterinary College; to one whose faculty has worked hard and earnestly for thirteen years; whose alumni are spread all over our continent, and endeavoring, by their efforts and their labors, to keep the work undertaken by their alma mater.

JURISPRUDENCE.

VETERINARY JURISPRUDENCE.

Read before the Montreal Veterinary Medical Association, by D. McEachran, F.R.C.V.S., President.

CONTINUED FROM PAGE 437, VOL. I.

WARRANTY.

Before noticing the diseases which are considered to be unsound, I will briefly notice the laws relating to sale and warranty. In England, a purchaser has no case unless he has a warranty, or unless fraud can be proved on the part of the seller.

" By the civil law every person is bound to warrant the thing he sells, or conveys, although there is no express warranty; but the common law binds him not, unless there be a warranty either in deed or in law, for *caveat emptor;* the meaning of this Latin expression is that the buyer takes the article sold with all its defects, and must not look to the law for any defects if its intrinsic worth does not correspond with its outward appearance. It cautions the buyer, therefore, according to the Italian proverb, that he has need of a hundred eyes, the seller of only one. By the law of England, warranties are divided into *express* and *implied;* the latter, however, differ in no respect from the former, except in the circumstance of proof. The intention to warrant is collected from the whole tissue of circumstances proved, as a legitimate deduction from them, like the presumption of any other part not established by direct evidence; while the express warranty is proved by direct and express testimony to the fact

itself. A warranty may also be *general* or *qualified*; as: "Received from A. B. $150 for a bay gelding, six years old, warranted sound," is a general warranty and makes the seller liable for all faults known and unknown to him; or, "Received from A. B. $150 for a grey mare sound except a curb on left hock"—this is a qualified warranty, and the seller accepts the risk of the curb mentioned specially.

"No particular words are necessary to constitute a warrant, and it is not necessary to say 'I warrant;' it is sufficient if he says the article is of a particular quality, or is fit for a particular purpose. The general rule laid down by Mr. Justice Bayley is, that whatever the vender represents at the time of sale is a warranty. Therefore, if a person at the sale says, 'You may depend upon it, the horse is free from vice,' it is a warranty. There was at one time a general opinion that a *sound price* given for a horse was tantamount to a *warranty* of soundness, but Lord Mansfield considered the doctrine to be so loose and unsatisfactory, that he rejected it and laid down the following rule: There must either be an *express warranty* of soundness, or fraud in the seller, to maintain an action. (Oliphant 114). With regard to the length of time a warranty shall extend, there does not appear to be any rule on the subject. It is distinctly laid down, however, by Lord Longborough on Fulder & Starkin, that no length of time elapsed after a sale will alter the nature of a contract originally false. It is also laid down by the late Lord Chancellor Eldon, when Chief Justice of the Court of Common Pleas, in the case of Curtis & Hannay, that if a person purchases a horse which is warranted and it afterwards turns out that the horse was unsound at the time of the warranty, the buyer may, if he pleases, keep the horse and bring an action on the warranty, in which he will have a right to recover the difference between the value of a sound horse and one with such defects as existed at the time of warranty, in which he may take an action to recover the full money paid." (Nimrod).

Blackstone says, " A warranty can only reach to things in being at the time of the warranty, and not to things in future; as a horse is sound at the time of buying him, not that he will be sound two years hence." I find the following legal facts com-

piled in the *Lower Canada Jurist* in Teasle & Prier: "To constitute a warranty in the sale of a horse, no particular language is required, and it may be stated as a general principle that whatever the vender represents at the time of the sale is a warranty. It is not essentially necessary (2 Stephens N. P. 1289) that the false statement of the defendant be accompanied with an intention to injure the plaintiff, because the legal fraud which is sufficient to sustain the action is complete when the intention to mislead is followed by actual injury, (ib. p. 1305)." * * "A verbal representation of the seller to the buyer of a horse in the course of dealing, that he may depend upon it, the horse is perfectly quiet and free from vice, is a warranty." (3 M. & R., p. 2). "If the vendor is cognizant of any defect in the thing sold, materially lowering its value in the market, the law implies a promise from him to make disclosure thereof, and the passing over in silence of an important fact or circumstance which ought in good faith to be known, is equivalent in contemplation of law to an express representation or even a warranty." (Addison on Contracts p. 55.) "Ordinary praise will not notate the contract or a mere expression of an opinion." (H., p. 129). "If there has been a *suppressio veri* or concealment of the truth, that alone, in certain cases and under certain circumstances, will amount to a fraud." (H., p. 130). "There was a fraudulent concealment notating the contract, when the vender of a mare stated at the time of the sale that he believed the mare to be sound, but would not warrant her, and the mare was unsound to his knowledge." (Wood *vs.* Smith, R. & M., p. 124). "If a purchaser makes no inquiries as to the soundness of the animal, and the vender has said or done nothing to throw the purchaser off his guard or to conceal a defect, there is no fraudulent concealment on the part of the vender." (Jones *vs.* Bright, R. & M., 175).

"In France and in this Province a legal warranty attaches upon the seller, but the legal warranty is for the same purpose as the English conventional warranty, the protection of the purchase against latest defects and diseases which are presumed to be within the knowledge of the horse-dealer, and not of occasional buyers.

"The article 1641 of the French Code has been transferred into our Civil Code under its article 1522.

"1522.—The seller is bound by law to warrant the buyer against such latent defects in the thing sold and its accessories as to render it unfit for the use for which it was intended, or so diminish its usefulness that the buyer would not have bought it, or would not have given so large a price if he had known them.

"1523.—The seller is not bound for defects which are apparent, and which the buyer might have known of himself.

"1524.—The seller is bound for latent defects, even when they are not known to him, unless it is stipulated that he shall be obliged to any warranty."

To be continued.

MEETINGS OF SOCITIES.

MEETING OF THE AMERICAN VETERINARY COLLEGE ALUMNI ASSOCIATION.

The first regular annual meeting of the American Veterinary College Alumni Association was held in the lecture room of the American Veterinary College, on February 28th, 1878. The meeting was called to order by C. B. Michener, at 11:30 A. M. On motion of A. A. Holcombe, seconded by P. Nostrand, Ernest Travers was elected chairman of the meeting. The following members were present: A. A. Holcombe, J. C. Corlies, P. Nostrand, E. Travers, C. B. Michener, W. J. Coates, C. H. Hall, C. H. Peabody, G. P. Penniman.

J. F. Winchester, Samuel S. Field, J. C. Force, Alvord H. Rose, William G. Schmidt and W. H. Wray were admitted as members of the Association. A. A. Holcombe, J. C. Corlies and E. Travers, the Committee appointed to draft a Constitution and By-laws, reported, and the report was accepted with a few slight additions and alterations.

The following officers were elected, by ballot, for the ensuing year: President, A. A. Holcombe; Vice-President, E. Travers;

Secretary. C. B. Michener; Treasurer, J. C. Corlies; Librarian, A. H. Rose. Julius C. Force was appointed a committee of one to conduct the newly-elected President to the chair. The President then appointed a Library Committee, consisting of W. J. Coates, Peter Nostrand and E. Travers; as Executive Committee, S. S. Field, Alvord H. Rose, C. H. Hall, J. C. Corlies and C. H. Peabody. The Vice-President was called to the chair, and A. A. Holcombe, with some terse remarks, introduced the following preamble and resolutions, which were *unanimously* adopted:

Whereas. The American Veterinary College has been repeatedly maligned by divers persons connected with the New York College of Veterinary Surgeons, in circulating the report that the last-named institution is the *only* one in the State chartered by the Legislature, and authorized to issue diplomas; and

Whereas, Such reports tend to cripple the American Veterinary College, by destroying the confidence of the public in the legality of its charter and the validity of its diplomas; therefore, be it

Resolved, That we, the Alumni of the American Veterinary College, in concourse assembled, do respectfully petition the Trustees of said College to take such steps as they may deem proper to arrest the circulation of all falsehoods and misstatements tending to impair our professional standing.

This measure was warmly supported by the Association, and the Secretary was instructed to forward a copy of the preamble and resolutions to the Board of Trustees.

By motion of C. B. Michener, the President was directed to appoint two members to read essays at the next regular meeting. Drs. Michener and Travers were selected.

The meeting then adjourned to meet in New York City about March 1st, 1879.

C. B. Michener,
Secretary.

VETERINARY HONORS.

Prof. D. McEachran, F.R.C.V.S., Principal of the Montreal Veterinary College, was unanimously elected Honorary

Member of the United States Veterinary Medical Association at the last semi-annual meeting, held in Boston, March 19th inst.

We are pleased to inform our readers that Prof. F. W. Prentice, M.R.C.V.S.L., of the Illinois Industrial University, has satisfactorily passed his examination for the degree of M.D., before the Cincinnati College of Medicine and Surgery. The step taken by Prof. Prentice to obtain his title of M.D., is one which cannot be too much encouraged in this country as a means of obtaining from the public the respect which is so much due to veterinary science. We believe that there are now in America more veterinarians, graduates of human medicine, than in any other part of the world.

CORRESPONDENCE.

CHICAGO, ILLS., March 12, 1878.

PROF. A. LIAUTARD, EDITOR AM. VETERINARY REVIEW:

DEAR SIR: I have sent to you a printed copy of a paper on veterinary sanitary reform, which was prepared by me, and read at the meeting of the National Agricultural Congress, in Washington, D. C., on the 20th day of February, this year, by the Secretary of said Congress, before a large audience. There were present members of both houses of the National Congress, and delegates, regularly appointed by State Boards of Agriculture, agricultural colleges, State Granges, and other prominent agricultural organizations, representing twenty-two States and Territories, besides delegates from five of the civilized Indian nations. The merits of the paper were argued by Drs. Snodgrass, Cochrane, Periam, and others. It was referred to the Committee on Business, and the following resolution in relation to the matter, by Dr. Snodgrass, was adopted:

"*Resolved,* That veterinary practice in this country is quite too generally unscientific and empirical; that the need of educating skilled veterinarians is imperative, and the attention of agricultural colleges is respectfully and urgently directed to more vigorous efforts in this direction."

Need I tell you that I was very much disappointed on reading

the above resolution? I am confident that every veterinarian in the land, having the interests of his profession at heart, will regard this resolution as tending more to frustrate, than to further the interests of the public, as well as of veterinary science. Will the National Government be likely to do much in this direction with the example before it of the indifferent manner in which this matter was treated by the representatives of the very people who are most interested in the progress of veterinary science?

"*That veterinary practice in this country is quite too generally unscientific and empirical,*" is something that everybody knows, and is the reason why my paper was presented. I doubt "*that the need of educating skilled veterinarians is imperative;*" skilled veterinarians in America are generally educated men. "*The attention of agricultural colleges is respectfully and urgently directed to more vigorous efforts in this direction.*" What vigorous efforts can be expected of these institutions who class veterinary science as a third or fourth-rate sub-division, and many of which do not even consider it worth employing a qualified veterinarian as teacher? The inducements offered by those of the agricultural colleges who employ veterinary teachers, are not calculated to secure the best talent; in fact, the salary offered is a mere pittance, the acceptance of which is next to a degradation to the person who accepts it.

Until the agricultural colleges can be made to understand that it requires at least three veterinary professors (instead of only one lecturer) to teach veterinary science as it should be taught, to insure proper education in this branch of medical science, just so long will the sentence in the above resolution, calling upon the agricutural colleges, remain worthless.

Yours respectfully, N. H. PAAREN.

COMMUNICATIONS RECEIVED.

F. S. Billings, Berlin; J. C. McKenzie, Rochester; N. H. Paaren, Chicago; E. F. Thayer, Boston; N. S. Townshend,

M.D., Columbus; Robert Wood, Boston; C. B. Michener, Carversville; D. McEachran, Montreal; J. Gerth, Jr., Berlin.

EXCHANGES AND JOURNALS.

Journal del' Agriculture, Paris; Scientific American, New York; Turf, Field and Farm, New York; Medical Record, New York; Hospital Gazette, New York; Western Sportsman, Indianapolis; Archives Veterinaires, France; American Agriculturist, New York; Scientific Farmer, Boston; Country Gentleman, New York; Western Farm and Live Stock Journal, Chicago; Mouvement Medical, Paris; National Live Stock Journal; Revue fur Thierheilkunde und Thierucht.

PAPERS RECEIVED.

Weekly Gazette, Montreal; The Press, Boston; Daily Kansas City Mail, Our American Farmer; Prairie Farmer, Chicago; Leader, Canada; Troy Daily Times; Veterinarian; Practical Farmer.

AMERICAN VETERINARY REVIEW,

MAY, 1878.

ORIGINAL ARTICLES.

ARTICLE I.

A CONTRIBUTION TO THE STUDY OF HOG CHOLERA.

By N. S. Townshend, M.D.,

*Professor of Agriculture in the Ohio Agricultural and Mechanical College. Read before the Columbus Academy of Medicine, November 23d, 1877.**

Mr. President:—An invitation from the Columbus Academy of Medicine to read a paper on the disease familiarly known as Hog Cholera, should be accepted as proof that physicians of this city are not indifferent to the malady which so seriously affects the prosperity of the surrounding country. It also affords evidence that physicians are not wanting in a humane desire to alleviate the sufferings of the creatures we subordinate to our pleasure or profit. It may be presumed that the members of the Academy are aware of the resemblances between some animal diseases and those which affect mankind; and of the facilities which animals afford for the study of such diseases. The communicability of some diseases from animals to men is equally well-known to you, as well as the influence which the diseases of milk and flesh-producing animals may have upon the health of the people. Permit me to add, that in a country where well-educated veterinarians are very scarce, there would seem to be a necessity that physicians should care not only for the families of their patrons, but also for their four-footed dependents.

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I regret that what I have to offer this evening is only "A Contribution to the Study of Hog Cholera," instead of an exhaustive treatment of the subject. My opportunities for investigation have been limited, and have occupied only such time as could be spared from the pressure of other duties. I have observed somewhat hastily, several affected herds of swine, and examined the bodies of some fifty, supposed to have been subjects of this disease, several of which were killed in order to determine what structural changes were discoverable in the earlier stages. I have not had sufficient opportunity to test the comparative efficacy of different modes of treatment.

History.—So far as I am informed, a serious and often fatal disease of swine, known as Hog Cholera, has been more or less prevalent in Ohio for twenty years. Whether this disease is identical with any disease of swine of former periods or of other countries, is a question to which it may be presumed that sufficient attention has not been given, inasmuch as widely diverse opinions are entertained. Of late years the disease has presented itself in almost every State of the Union; but especially in States west and south. The report of the Department of Agriculture for 1876, shows a loss in the State of Missouri of 30 per cent. of all the swine in the State; in the States of Illinois and Kentucky the loss was more than 20 per cent.; in Indiana, 18 per cent.; in Georgia, 10 per cent.; and in Ohio, 7 per cent. The aggregate loss of the whole country was twenty millions of dollars.

Symptoms.—The first stage of the disease is congestive; the animal crawls under the litter, or huddles close to his companions, refuses solid food and appears sluggish; this stage may last a few hours, or it may continue for a day or two. If the animal does not die apoplectic in the congestive state, reaction follows; then there is thirst, feverishness, and redness of the skin, especially where the hairy covering is least abundant. In some animals this redness is diffused, but more frequently it appears in spots, from which the cuticle is sometimes raised in small blisters; the conjunctiva is reddened and the mouth is dry. The pulse is from 100 to 120, and the temperature from 104° to 106°; and in one instance I found it as high as 111°. Soon the abdomen becomes

tumid and tender, the animal expresses great pain when compelled to move, and prefers to lie prone upon the belly. There is often great difficulty of breathing, which is more or less spasmodic, and attended with severe cough; not unfrequently there is hemorrhage from the nostrils and swelling of the parotid glands. Through the febrile, or acute inflammatory stage, there is constipation, which is afterwards followed by diarrhœa; at first the evacuations may be destitute of bile, then bilious, and very soon dark colored, or blood-stained and very fœtid. Finally, locomotion becomes difficult, unsteady, and perhaps spasmodic, or the posterior extremities are entirely paralyzed. Death may occur within a few hours, and during the congestive stage as already stated; it may occur in a few days from the effect of inflammation, or in one or two weeks from exhaustion, from peritonitis, or from effusion.

Post-mortem.—On examination after death, the cavity of the abdomen is often found to contain a few ounces of serum, and sometimes fibrinous exudations. The liver is not materially changed in size or texture, but often has a yellowish or ashy color; occasionally it was found greatly engorged. The spleen was enlarged in nearly half the cases examined, sometimes to a great extent, and so disorganized that when the capsule was ruptured the grumous contents would escape. This disorganized condition of the spleen, as might be expected, was greatest when the blood showed most change.

The stomach often contained undigested food, the mucous membrane was usually congested, but rarely showed as decided evidence of inflammation as other portions of the alimentary canal. The small intestines, on their external surface, presented patches of deep discoloration; occasionally they would be glued together by limphy exudations. The mucous lining showed general congestion, and inflammation in patches; sometimes tumefaction and exudation would be almost confined to the aggregate and solitary glands, which in some cases were covered by dark colored crusts, or where these had sloughed off, patches of ulceration were seen. Frequently, however, the inflammation and ulceration affected glandular and other portions indifferently; or the whole

inner surface of the bowel would be inflamed for several inches in extent. In the large intestines the mischief was still more apparent, the cæcum often contained a multitude of inflamed and elevated spots, or in their place ulcerations as large as the impressions made by the ends of one's fingers on a dusty table, and as close as the fingers held together could make them. The colon usually presented ulcerations similar to those of the cæcum; its contents were small masses of hardened fœces dark colored or blood-stained; and not unfrequently dark fluid blood in considerable quantity. Sometimes portions of the colon were almost gangrenous. In a few cases the intestine had been perforated by ulceration, and peritonitis had resulted. The mesenteric glands were almost always enlarged; the kidneys were congested, the bladder contained healthy-looking urine, or it was tinged with bile or blood.

The lungs were always congested and often inflamed, or impervious to air from serous infiltrations; the air passages were filled with frothy mucous, the trachea and larynx were sometimes found in a state bordering upon gangrene. In a few instances, where the cough had been an unusually marked symptom, the smaller air-passages were crowded with nematoid, or thread-like worms, the *Strongylus paradoxus*; these cases were so few, that the presence of the lung-worms can only be regarded as an accidental complication.

Effusion within the pleura, or pericardium, was sometimes seen; the blood in the heart cavities was clotted, but the clots were soft and in general the blood elsewhere was fluid. On examination of the blood with the microscope, the blood globules appeared shrunken and their margins irregular. In the blood drawn from some animals that were killed, bacteria were seen with a power of from eighty to one hundred diameters. The *Bacillus anthracis*, which is said to be pathognomonic of anthrax fever, was looked for but not found. The brain and spinal marrow were repeatedly examined, but without disclosing any marked lesion.

Pathology.—That this disease corresponds in no degree with Asiatic cholera of the human subject, is evident on slight exami-

nation. In Hog Cholera, constipation is much more common at the outset than diarrhœa, and afterwards, when diarrhœa is present, the evacuations are unlike the characteristic discharges of Asiatic cholera. That the disease is an idiopathic fever of typhoid type, substantially like typhoid fever of the human subject, would seem to be proved by the congestion, inflammation, and ulceration so generally found in the intestinal canal, by the frequency of hemorrhages from the bowels, and the frequent enlargment of the mesenteric glands and spleen; also by the petechial eruption over the surface, and from its greater tendency to attack young animals. On the other hand, Hog Cholera resembles what is known in Europe as anthrax fever, the symptoms in the living animal being almost identical, and the post-mortem appearances not greatly dissimilar. Hog Cholera differs from what are styled anthracoid diseases by its much less malignity; and, although in my opinion it is contagious so far as to be communicated in some way from diseased to healthy swine, it does not appear to be transmissable to other species of animals, nor to man, while the anthrax fever of Europe passes readily from one kind of stock to another, and is often fatally communicated to mankind. The blood of animals suffering from anthrax fever, it is said, always contains the *Bacillus anthracis*. So far as my examinations have gone or my information extends, the presence of *Bacillus* has not been demonstrated in Hog Cholera. I should add, however, that many European veterinarians regard what is styled anthrax fever of swine as nothing more nor less than typhoid fever. By some persons Hog Cholera is regarded as typhus, rather than typhoid fever; but the frequency of intestinal lesions and severe suffering in Hog Cholera, are adverse to such a conclusion.

Cause.—First, contagion. It seems to be established that this disease has been communicated to healthy swine by bringing them in contact with the affected, or by confining them in cars, pens, or yards, that diseased animals have recently occupied. It appears, also, that the contagion may, in some way, be conveyed for the distance of half a mile or more; also, that animals kept in the most cleanly and thrifty condition are not proof

against the contagion. If the disease is typhoid fever, we should expect to find that contaminated water is a principal medium through which the disease germs pass from one animal to another. How far exemption from attack may be secured, when the food and drink are free from all possible contamination, has not, so far as I know, been determined. Second.—It seems, also, to be established that healthy hogs, if subjected to hard driving for considerable distances in hot weather, or if crowded together in large numbers, may develop the disease *de novo;* and, possibly, other conditions and circumstances not yet understood, may tend to a similar result.

Treatment.—With this malady it is especially true that prevention is better than cure; the attempt to medicate a case of Hog Cholera, when, by so doing, there might be danger of exposing other animals, is the reverse of economy. When it is certain that an animal has this disease, it should be killed immediately and buried, and the whole premises thoroughly disinfected. For this purpose, all litter and rubbish should be burned, and the pens, or styes, fumigated with burning sulphur. Hogs that have been in contact with sick ones, may be expected to show symptoms of the disease, after thirteen or fourteen days, at furthest, if the weather be cold; if the weather should be very hot, the period of incubation may be shortened to three or four days. During the period of incubation, sulphur should daily be given with the food, or the hyposulphite of soda may be used instead. This is a cheap drug, and a sufficient quantity will be taken, without objection, if dissolved in the drink. Some farmers think they have kept off the disease, after exposure, by acidulating all the food slightly with sulphuric acid; others believe that the sulphate of iron is equally effectual. The carbolic, cresylic, and salycilic acids may prove better disinfectants than those already named; or, possibly, change of quarters may be more benefical than any plan of medication. If an attack of the disease cannot be prevented, and loss of appetite, with nausea and constipation, are noticed, then laxatives are clearly indicated, and sulphur enough to act may easily be given with the food or drink; or castor oil, with spirits of turpentine, may be administered to an animal that

is conveniently small, and repeated, from time to time, so long as enteric inflammation continues. Corn, boiled in weak lye from wood ashes, is relied upon by some, while others place soft soap where the sick animals will take it, instinctively, to relieve the acidity of the stomach and bowels, from which all seem to suffer. After the disease has run its course, and left the animal without appetite, and with an exhausting and fœtid diarrhœa, the sulphate of iron answers a good purpose, combining tonic with astringent effects. How far such treatment would prove effectual, if intelligently followed, I am not prepared to say. I have several times been thanked for suggesting such a course by owners who believed it had been of great service.

There are many patent remedies for this disease before the public; they are all published in the Official Gazette of the Patent Office. Some of these remedies contain valuable articles, though not unfrequently the drugs combined are incompatible. A receipt to prevent, and to cure, and to be given in all stages and conditions, you would think more likely to do harm than good. Certainly you would have little faith in any specific that might be offered for the prevention and cure of typhoid fever of the human subject, although you would expect to see a large majority of your patients thus afflicted recover under treatment properly adapted to their condition.

Mr. President, I am fully aware that the paper I have just read is very unsatisfactory; there are but few points upon which I have been able to speak with absolute certainty. My object will be attained if, in consequence of any discussion that may follow, this disease should hereafter be better understood and more successfully treated.

VETERINARY REFORM.

By N. H. Paaren, V.S., Chicago, Ill.

Read before the National Agricultural Congress in Washington.

It is not alone to the cultivation of the soil that agriculture is required to devote attention; it has also to deal with flocks and

herds, with the preservation of the health of the animals of the farm, and when disease overtakes them, their restoration to health by proper means of treatment. The relation between agriculture and veterinary art is close and inseparable,—their disconnection being alike injurious to both.

There is no subject of greater importance to the live stock interest of this country, which is, indeed, one of the leading interests, than the veterinary science. Every year diseases multiply among our live stock. Besides the ordinary and generally known complaints of cattle, the middle and western States especially have been visited by the Texan fever and the so-called hog cholera, and the damages resulting from the ravages of these diseases have been enormous. While all Europe is alive to the importance of being prepared to meet any outbreaks of disease among domestic animals, we Americans, to the astonishment of other civilized nations, and greatly to our shame, be it said, have neglected to take steps towards eradicating the prevailing destructive diseases among swine, almost amounting to a plague in its effects, by which the swine crop has been decimated for years, and caused an annual loss of millions of dollars to the farming community. Would such a state of affairs be tolerated, even for one year, by any other civilized nation?

It may be asked, what are our means of successfully contending against the diseases that are almost constantly raging, and those more dreadful maladies that threaten our flocks and herds? We are almost without any! Has our government done anything in the way of aiding or encouraging instruction in the only department of knowledge that can be of service in warding off or curing the diseases of domestic animals? Absolutely nothing! While the ranks of every other profession are crowded, there is a great scarcity of persons who have the requisite skill and knowledge to treat a sick domestic animal of any kind. Nowhere do ignorance and superstitition so show themselves as in the remedies that are administered to sick animals. No torture was ever so complete as that inflicted on sick domestic animals by the ignorant quacks who pretend to know how to doctor them. Intelligent humanity revolts at the way disease and lameness are treated almost every-

where in our land; and the future historian will allude to some of the practices of our horse doctors to prove that in the year of 1878 we had not yet entirely emerged from the darkness of barbarism, inasmuch as such a state of affairs was sanctioned, nay, indirectly aided, by being tolerated, by what is called the best government the sun ever shone upon.

The status of veterinary institutions in Europe, and the esteem in which the science and art of preventing and curing diseases of domestic animals is held by all the leading nations of Europe, is an example worthy of following by us Americans. No course would be regarded by the people with more favor, or of which there is greater need. We have plently of lawyers, physicians and ministers, but the paucity of efficient doctors of domestic animals is remarkable when we think of the urgent demand for them and the good they might accomplish.

The prevention of spreading disease among domestic animals should be regarded as a political question, as it involves more or less the well-being of the whole community. The extension of diseases among live stock is not only a loss to the owners thereof, but also to the general public. Besides the consequent diminution in the food supply, the people also incur the risk of obtaining it of an inferior if not injurious quality.

Losses from diseases have, during late years, been heavy, particularly in the middle and western States. A large proportion of the losses are the result of downright neglect and bad management. Diseases, obscurely named, such as "distemper," "murrain," "hollow horn," etc., are causing considerable losses in all parts of the country. Scab among sheep appears to be spreading uninterruptedly on no small scale. Of all domestic animals, the fatality is greatest among swine. Almost entire stocks of individual farmers have been swept away in some counties of Illinois from the so-called hog cholera. From the crop report of the Illinois Department of Agriculture, for 1877, it appears that the number of swine lost by disease is reported at 358,844 head, valued at $1,583,415, which is $7,403 more than the amount lost during 1876. Evidently these figures do not cover the actual losses; for we are informed that correspondents to the Depart-

ment in 1877 confined their estimates of loss by disease to the hogs assessed in May, 1877, which does not include a large proportion of the spring pigs, that enter very largely into the aggregate loss sustained each year, and which are not included by many assessors. The annual loss to the State is very difficult to estimate, or even approximate, without official enumeration, as many correspondents give the average weight per head of dead hogs, and overlook the loss of flesh sustained by animals affected from the time the disease is contracted until death, which loss in weight in many cases is over 50 per cent.

The contagions pleuro-pneumonia of cattle is stealthily, slowly and almost uninterruptedly gaining ground in the eastern States. If it were not for the fact that the current of trade in cattle on this continent is almost exclusively eastward, this disease would long ago have found its way to the Pacific coast. Nevertheless it would be folly to expect immunity from this plague in the west; for at no distant day will its presence here be a settled fact! And what should prevent it? No measures, legal or otherwise, exist for the prevention of its spread. The farther this plague extends westward, the less will its progress be interfered with, because the almost entire absence of qualified veterinarians leaves the farmers and stock owners in ignorance of the presence of the disease among their stock, until serious and wide-spread losses will have been sustained; and when the local or state authorities at last shall be compelled to take the matter under consideration, it will have spread far beyond our control. The extension westward of the contagious pleuro-pneumonia will most likely be effected by means of trade and traffic only. The disease affects blooded cattle as well as common stock. If common stock is not shipped westward, blooded stock is, and by this means it may be brought right in among cattle ranges in the territories. The cattle trucks may be another source of its spread westward. We all know that the use of these are not confined to the length of a track of any of the eastern railroad corporations, but traverse the net-work of tracks extending over the whole length and breadth of the land. Contemplate for one moment the result, when once this plague gets a foothold on the large cattle

ranges of the plains. Our half wild cattle on the ranges will communicate this disease to the buffaloes, and these again will cause its spread from north to south over all the territories, without limitation or control. In regard to its westward course, we have reason to believe that this disease is already now located in some parts of Indiana. England has, up to the present time, lost over 10,000,000 head of cattle from the contagious pleuro-pneumonia alone, representing a cash value of about £100,000,000. The array of figures relating to the mortality among live stock, as presented by the various State Agricultural Departments, clearly indicates a necessity for the inauguration of prompt measures, and the establishment of means whereby these ravages by disease can be brought under control. The statistical reports of the Agricultural Department of the national government, give but a slender idea of the devastation, misery, and loss that is due to the existing ignorance, apathy and neglect of veterinary sanitary science. It is no exaggeration to say, that it requires several times the figures given by the Agricultural Department, to foot up the actual losses, which the prevailing diseases among live stock continually entail upon the industry of the country.

The immense losses by disease among live stock must to a great extent, be accounted for in the absolute scarcity of competent veterinarians—men who have been thoroughly and scientifically educated in this branch of medical science. That the great multitude of intelligent farmers and live stock owners of America should be obliged to contend with quacks and charlatans, while all other civilized nations (some of them as far back as a hundred years ago) have been provided by their governments with amply endowed veterinary colleges, is beyond all sound reasoning—is, in fact, nothing less than a national disgrace, and justly merits the derision of other nations.

In view of the vast interests involved, and the fearful tribute which is annually extracted from the public by the ravages of epidemic and other diseases among live stock, it is a matter of surprise that no intelligent efforts have been made in the way of prevention. The national government has hitherto confined itself to the gathering of statistics, and the apparent exactness of these

provokes the impression, that the Agricultural Department takes particular pleasure in holding up before the gaze of the disgusted sufferers the multiplicity and greatness of their losses. As an expression of a faint feeling of sympathy, the report is flavored with a sprinkling of the kind of abominations which we are wont to see paraded in the agricultural press as remarkable specimens of sure cures, propounded by traveling "hoss doctors," cow leeches, and town gossipers.

It is but reasonable to believe that a competent head at the Agricultural Bureau, having a due regard for the true interests of the agricultural classes of the United States, in consideration of the vast amounts of capital invested in live stock, and the many and heavy losses to which the owners are constantly and almost helplessly subjected, that such a functionary would long ago have taken steps towards ameliorating these conditions, and thus lessen the losses of this, the largest class of producers in the land. The inactivity in this direction displayed by this Department, warrants a belief that the matters under consideration will be apt to remain in *status quo*, unless the National Agricultural Congress, now in session, embraces the opportunity of its meeting to frame an appeal direct to the National Congress. Not only the press, but the whole agricultural population, would second such a motion.

I have, on former occasions, through the agricultural press, and otherwise, called attention to the disastrous consequences that would be certain to follow on the appearance of a pestilence, like the rinderpest, from the want of a sufficiently numerous, able and scientific body of veterinarians in America. Judging from the spread of epidemics, their peculiar tendency to migrate from east towards west, over the whole globe, it seems almost certain that some day this country will be visited by such a plague, that will carry havoc among our numerous herds. Our loose and insufficient government regulations, concerning the inspection of live stock, etc., at the various places of embarkation in Europe (regulations which would certainly not be sanctioned by any other civilized government), sufficiently indicate the facility with which such a plague, when once here, would be apt to devastate the vast herds of our broad land. With the example before us of the efficient

measures in force in all the European countries, it is astonishing to witness the lethargy of our government, its utter disregard of public interests in this direction, and the general outcry from the agricultural population. By neglecting to provide for the present requirements as indicated in this paper, as well as for future very possible contingencies, the national government does assume a fearful responsibility.

If veterinary science could be placed on a footing in the United States level with that on which it stands in Europe, and receive the same encouragement and degree of patronage from our government, as it receives there, the consequent benefit to this country would be beyond calculation. With veterinary science better cultivated, and the profession placed on a better footing, and becoming more numerous, among the consequences would be a more intelligent management of live stock, and rational treatment of diseases, which would save many millions of dollars annually to the country. A radical change in existing affairs is imperative, and the unquestionable importance of this matter warrants a demand upon the national government for immediate action, on behalf of the live stock interests of the United States.

With a view of furthering the interests of farmers and live stock owners of the United States, I would respectfully suggest that, among the resolutions adopted at the present meeting of the National Agricultural Congress, there shall be embodied a call upon the national government for immediate action in the matter of providing, by suitable legislative enactments, ample and sufficient means :

1. For the establishment and maintenance of a National Sanitary Bureau.

2. For the establishment and perpetual maintenance of a National Veterinary College.

The farmers and breeders all over the land, in whose behalf this paper is written, will appreciate your favorable consideration of these matters. They have long and patiently suffered immense losses from the ravages of disease among their live stock, losses which could have been greatly lessened, if not altogether prevented, but for the apathy and neglect of the authorities whose

duty it is to watch over their interests and come to their rescue when need be.

Your favorable consideration of these matters will also materially assist in elevating the veterinary profession in the United States to the social position in society which it has long occupied among other civilized nations, to which it is justly entitled, and for the attainment of which the efforts of its most distinguished votaries in the United States have hitherto been in vain.

A CONTRIBUTION TO THE PATHOLOGY OF THE PULMONARY DISEASES OF THE HORSE.

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TRANSLATED FROM THE GERMAN BY F. S. BILLINGS, OF BOSTON.

(*Original in the Archiv fur Thierheilkunde, Band II, S.* 80.)

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(CONTINUED FROM PAGE 29.)

GELATINOUS INFILTRATION OF THE LUNGS.

This is a well known and very frequent condition of the lungs of horses affected with malleus, and I cheerfully concede that I have met with much difficulty in my endeavors to follow its development and to arrive at a satisfactory idea of the same. The parts of lungs thus infiltrated appear jelly-like, transparent, firmly filled with fluid, and extended to a degree conformable to a medium condition of inspiration. The fluid in the alveolæ of the diseased section of the lungs is viscid, and with the quantitative augmentation of the same, the changes upon the lungs become always more striking. Frequently large sections of the lungs are complicated, again several labuli, and frequently, also, only a labulus. The fluid contained in the alveolæ of the dense and airless parts of the lungs does not flow out on transverse section but first appears upon the cut surface by the application of pressure'

The contents of the alveolæ resemble mucus in the highest degree, and it must be our next task to decide whether it contains mucin or not. Should we able to discover mucin in the same, as the alveolæ do not secrete mucus, the idea would then receive confirmation, that the fluid in question is secreted by the bronchial mucosa, and only aspired into the alveolæ. I was however unable to find mucin in the fluid. I have had frequent opportunities to study the changes in question, and to accumulate great quantities of the fluid in question by the old, worn-out horses used for anatomical purposes at the Berlin Institute, but have never been able to find mucin in the same. The fluid is viscid and resembles the white of an egg. Cellular elements are also to be discovered in the fluid, most of which bear a strong resemblance to the white blood cells. I will here take no part in the discussion as to the derivation of the cells, except to remark that some of the cells are smaller than the white blood cells, while others are much larger and provided with several nuclei. The last are considered by Friedlander to be desquamated swollen epithelial cells from the alveolæ. This disease product, contained in the alveolæ, consists then of cells and a mucus-like fluid. This product is consequently movable, and to me the question: Why these masses were not expectorated, why do they remain filling up the alveolæ? became one of great interest. I must here remark that I cannot accept the nomenclature which Rindfleish has given to these changes, viz.: "Ædema, or inveterate œdema," and still less, when I, at the same time, consider the explanation of R., according to which the condition is dependant upon the exudation of blood serum from the vessels in consequence of mechanical disturbances of the circulation. We have here to do with an inflammatory process, as is demonstrated by the appearance of round cells in the fluid contained in the alveolæ. We have therefore to do with a so-called inflammatory ædema. Cohnheim has treated this subject better than anyone else, and his assertions are exactly conformable to the condition in point in the lungs, if we at the same time consider the circumstance under which the inflammatory processes in the lungs are developed. Laennec was the first to give the name "gelatinous infiltration" to these changes in the

lungs. Bruckmuller has also treated them as an inflammatory process, under the name "jelly-like infiltration" ("gallertige infiltration"). By these processes the fluid elements, to a less extent the cellular, *i. e.*, the white blood cells, leave the blood vessels; the cellular elements are probably desquamated alevolæ epithelium. The alveolic epithelium desquamates in the same manner as the epithelium of a mucosa by a catarrh. Buhl therefore speaks of a "*desquamative pneumonia*," and lays emphasis also on the inflammatory participation of the exudative processes. All surface processes, when bound with a plentiful secretion, are designated as *Catarrh*, and as the mass contained in the alveolæ is not alone made up of desquamated epithelial cells, but also of the products of inflammatory exudation, I consider the name "*Pneumonia Catarrhalis*" more appropriate. Virchow, Bartels, Ziemssen, Steffen and others also designate the inflammatory processes in the lungs in question by the same name.

Horses suffer almost exclusively on the catarrhalic pneumonia, however, in combination with certain changes which I intend to consider in another article. However, every catarrhalic pneumonia by horses does not produce a gelatinous infiltration of the lungs, and it remains for us to investigate the further conditions under which this infiltration develops.

Conditions to gelatinous infiltrations are:

1. Atelectasis of the pulmonary tissues, *i. e.*, the lungs must be atelectatic before the inflammatory process begins. Rindfleish has called attention to this anticipatory condition of the lungs. The atelectatic part has a more homogeneous character, and when the alveolæ of the same become filled with such a cellular fluid mass, it acquires the already mentioned gelatinous transparent character. The atelectatic parts become, on account of the inflammation, ædematous, and the masses contained in the alveolæ, fluid and cells, form a sort of substitution for the air which is wanting.

Atelectasis represents the lungs minus air; gelatinous infiltration rests upon the replacement of the lost air by an inflammatory exudate; it is atelectasis plus inflammatory ædema.

2. Further belongs to gelatinous infiltration, anæmia, or, in

other words, a condition favorable to the development of gelatinous infiltration is the white, pale atelectasis. This anæmia is the reason why the gelatinous infiltrated parts of the lungs are of a yellowish, or yellowish grey color. Rindfleisch looked upon this condition as the second stadium of his atelectatic ædema, and designated it as *inveterate œdema.* According to R., a hyperæmia develops itself in every atelectatic part in consequence of mechanical hindrance of the capillary circulation in such parts. This hyperæmia shall give occasion to the exudation of the blood serum in the alveolæ, and condition a change in the pulmonary tissues which he designates as splenisation. *Inveterate œdema* is only to be distinguished from *splenisation* by the presence of hyperæmic phenomena by the latter, and the anæmia of the former to the continued transudation of serous fluid in the alveolæ and the pressure of the distended alveolæ upon their circumscribing capillaries. I do not think, however, that either splenisation or gelatenous infiltration owe their genesis to a mere serous transudation. By both inflammatory processes are present in the atelectatic tissue, a catarrhalic pneumonia *the difference being that the inflamed atelectatic tissue by splenisation is hyperæmic, by gelatanous infiltration, anæmic.* The splenisated and gelatinous infiltrated parts of the lungs contain not alone serous fluid, but the product of an inflammatory process, *i. e.*, water which is rich in albuminous elements and round cells. Gelatinous infiltration (inveterate ædema, Rindfleisch) is therefore not the two stadium of splenisation, but the first as well as the last may appear idiopathically, and the question now interesting our attention is, why at one time gelatinous infiltration, and at another splenisation develops in the lungs.

I have at present only met with gelatinous infiltration by emaciated and worn-out horses, which were already ischæmic. It then makes no difference through what circumstances horses have become ischæmic, if from insufficient food, or from chronic disease processes. By such horses all parts are pale, also the atelectatic parts of the lungs, and the slight catarrhalic inflammation develops in the atelectatic parts, those changes which we designate as gelatinous infiltration. This grade of ischæmia present

regulates the paleness of the parts, and this paleness is not the second stadium of a protopathic process bound with hyperæmia and trans or exudation by which compression of the capillaries and consequent ischæmia is caused, but the ischæmia has existed from the beginning.

When, however, an atelectatic part is at the same time hyperæmic forins. by vital hypostosis, and in the hypostatic atelectatic parts the inflamatory processes in question develop, the condition produced is designated as splenization.

Gelatinous infiltration is, therefore, made up of atelectasis, *ischæmia* and a low grade of cellular infiltration in the alveolæ beginning of hepatisation. Splenization is made up of atelectasis, *hypostatic hyperæmia*, transudation and a low grade of cellular infiltration in the alveolæ.

The condition to the development of atelectasis and ischæmia are self-evidently present by emaciated horses. By such the respiration is weak, and they frequently suffer with bronchial catarrhs. Atelectasis will especially develop in such lungs, in which the atmospheric circulation is under normal conditions very poor, and in the inferior median and anterior section of one or the other or both lobes of the lungs. The extension of the atelectasis is dependant upon the extent of the bronchial catarrh, and again upon the grade of respiratory weakness present. As such horses are also ischæmic, the atelectatic parts of the lungs are also pale. We meet with atelectasis and ischæmia very frequently by horses suffering from malleus chronica. Such horses are weak and ischæmic, their respiration is insufficient, as proven by abductions they frequently suffer from a more or less extensive bronchial catarrh.

The weakness and emaciation of malleus diseased horses are conditioned by the influence of the local processes upon the general nourishmental condition of such animals. The lungs of horses diseased by malleus are predisposed to gelatinous infiltration, which at once develops when such animals become complicated by the processes of pneumonia catarrhalis. Sections of one or both lobes of the lungs suffer changes corresponding to the extension of the inflammatory processes. I do not think, how-

ever, that this gelatinous infiltration has anything to do with malleus; it is a collateral process, which exists along with those of malleus, and is also a frequent complication of the same. In this case we cannot assert that gelatinous infiltration represents a stadium of malleus, for I have met with the same changes by old emaciated horses, which were free from any intimation of malleus. Further proof in our favor is, that by horses diseased with malleus we are frequently only able to demonstrate the changes produced by the processes of the same upon small and circumscribed parts of the lungs, while gelatinous infiltration could be demonstrated in large sections of the lungs. By a considerable extension of the gelatinous infiltration very striking clinical phenomena often become apparent, which are conditioned by the, in general, locally limited pneumonia catarrhalis acuta. Observers have said that the processes of malleus have become acute, while in truth, we have before us nothing more than the complication of the processes of malleus with those of an acute pneumonia. In the clinic of our school there is, alas, a very abundant material for such observations, and horses diseased from malleus have frequently perished from this complication, by which intra-vitam notwithstanding the most circumspect investigation we were unable to unquestionably diagnosticate malleus. The lethal termination is not, however, produced by malleus, but by entirely unlooked for event. *When the animals have reclined for a long time upon one side anticipatory to death, the diseased part of the lungs upon the side in question will at the same time show the phenomena of hypostatic hyperæmia, and then we do not find gelatinous infiltration, but splenization in the deepest situated parts of the lungs.* Such parts are easily recognizable from the resemblance in appearance which they bear to the spleen.

Gelatinous infiltration and splenization come to pass therefore under uncertain circumstances, and both represent the beginning of an inflammatory process, or a cellular infiltration, that is, the alveoæ become entirely filled with round cells. A higher grade of irritation undoubtedly exists upon such places, and this full hepatization develops cet. par. in the vicinity of the bronchi.

For this we find a simple explanation ; the catarrhalic pneumonia is always introduced by the bronchi, and consequently the most severe irritation must always take place in the vicinity of the same. Broncho-pneumonia has a centre-like (that is the processes are more severe in places) character noduli are developed, which sit in a gelatinous infiltrated or splenisated ground. The centra are white in the gelatinous infiltrated parts, and greyish red in the splenisated ; they are dry and project beyond the general level of the sectioned service of such pulmonic tissues. I am convinced that those people who hold all possible nodulous centra in the lungs for "tubercles noduli" of malleus, will also look upon these broncho-pneumonic centra as having a specific character. I can, however, assure all such that such centra have nothing whatever to do with malleus, and can develop under the named conditions by horses entirely free from the complications of that disease. At other times we find entire lobuli or whole sections of the lungs in this condition of full cellular infiltration—hepatisation.

Pneumonia catarrhalis frequently develops by emaciated cachectic horses, such animals having a predisposition to this disease. I cannot, however, agree with Buhl when he attributes his *consecutive disquamative pneumonia* to a disease of the blood, *i. e.* to the reception of specific elements in the circulation, as, by carcinoma, caries, tuberculosis, etc. I have at least been unable to convince myself that this assumption is correct. The nourishmental conditions of a horse frequently become very poor by malleus, and with this general disturbance of the nourishment; by such horses as well as others, a predisposition to pneumonia becomes developed. I will not attempt to decide what conditions this predisposition, as anatomical reasons for the same in the pulmonary tissues are not, for the present at least, demonstratable. The lungs of such animals are vulnerable, and this physiological characteristic is not to be demonstrated anatomically. Pneumonia catarrhalis would under such circumstances be generated by a very slight irritation, which may come to pass by means of the respiratory tractus, but may not be introduced to the lungs by means of the blood. By a healthy horse such an irritation would

not suffice to develop an inflammatory process in the lungs, but it is sufficient when the predisposition is present, which we have been considering as due to emaciation, etc. I cannot look upon gelatinous infiltration in such cases, as the expression of a deuteropathic pneumonia; as by horses diseased with malleus, it stands in no direct relation with that disease. Pneumonia develops entirely independent of the latter, and by the side of the same, and in animals by which malleus is not present. Although scrophulous individuals become easily sick and are frequently subject to pneumonia, yet no pathologist would be inclined to designate such a pneumonia as deuteropathic; it is just as protopathic as every other pneumonia which develops by healthy individuals after violent irritation. Malleus predisposes the pulmonary tissues to gelatinous infiltration, because it causes the development of atelectasis and ischæmia, and it generates further a predisposition to inflammatory processes in the lungs. The last are, however, conditioned by simple aetiological momenta, *i. e.*, such which in general cet. par. would be likely to produce inflammatory processes in the lungs. Pneumonia or gelatinous infiltration is here only a complication with malleus, and must not be classed with the special processes of the latter.

A second form of gelatinous infiltration stands, however, in intimate relation to the processes of malleus in the lungs. I cannot, however, in this place go into a minute discussion of malleus, but I will remark, that in every place, where the ulcerative processes of malleus exist, in most cases we are enabled to demonstrate the presence at the same time of simple inflammatory processes. For instance, we have upon the mucosa of the cavitates nasi, at the same time with the chancre (ulcus) of malleus, a simple catarrh upon that part of the mucosa complicated by the malleosic processes; in all places we may observe this combination of specific and simple inflammatory processes. The catarrhalic inflamed parts of the mucosa give the masses for expectoration. *I will not deny that the ulcers (chancres) do not also give a secrete, but their secretion is but insignificant; the greater part of the secretion is given by the simple catarrhalic diseased parts of the mucosa.* When the chancres (ulcers) of malleus penetrate deeply into the underlying

tissues along the larger part (in point of diameter) of the respiratory tractus, they produce *perichondritis*, and upon the smaller parts *peribronchitis* or a *broncho-pnemonia.* These profusely situated processes have nothing specific about them, being purely inflammatory in character. We may observe by the presence of malleosic processes in the bronchioli resp. the termination of the same, a simple inflammatory process in the neighboring alveolæ. This combination of specific and non-specific processes was first made clear by Vichow, and later also by Roloff and Bollinger. The malleosic neoplasmata are to be mostly found in the parietes of the bronchi, and, indeed, as Gerlach was the first to show, in the ends of the bronchioli, and by the exceeding delicacy of the parietes of the bronchioli, it is easy for the processes of irritation to extend themselves to the tissues in the vicinity. The adjoining alveolæ are, however, atelectatic, owing to the early obstruction of the lumina of the bronchi by the malleosic processes in the parietes of the same, and further to the muco-purulent secrete of the bronchial mucosa. The development of atelectasis may be accelerated by the concomitant presence of insufficient respiratory movements, as well as emaciated cachectic animals. The adjoining alveolæ are also ischæmic. This ischæmia is the consequence of the hyperplasia of the connective tissue of the adventitia of the vessels (capillary ramifications of the a. pulmonalis). We can demonstrate this hyperplasia regularly by malleus in the peri-bronchial and perivascular connective tissue, and the adventia of the vessels in question is especially strongly complicated. By the hyperplasia of the connective tissue (admentitia) the vessels become compressed, aud those parts of the lungs ischæmia which derive their blood from the vessels in question. This paleness is especially marked when the animals in question are at the same time emaciated and ischæmic. For the same reasons the peri-bronchial alveolæ are atelectatic and ischæmie by horses complicated with malleosic bronchitis and peri-bronchitis. We may always be able to demonstrate around malleosic diseased bronchi, a circle of gelatinous infiltrated pulmonary tissue. This gelatinous infiltration is of a deuteropathic origin, and as it is of malleosic

origin, it may be designated as malleosic gelatinous infiltration (or gelatinous infiltration of glanders). The malleosic processes owe their genesis to a specific contagion, and it is therefore solely dependent on the intensity of the irritation, if the products are of a specific or simple inflammatory nature. Both forms of development are to be found in the course of malleus, and the malleosic gelatinous infiltration correspond to the simple slight conditions of irritation.

There is also a proto- and a deuteropathic gelatinous infiltration. Both represent inflammatory processes in atelectatic and ischæmic pulmonary tissue. I explain the genesis of the first by the complication of malleus with an acute pneumonia; and the last by the extension of the malleosic processes to the surroundings. As, however, the malleosic bronchial complications are generally multiplex present, and as in general many bronchi lying in close vicinity to each other are complicated concomitantly, so must the peri and inter-bronchial pulmonary tissue always show a state of gelatinous infiltration. I must not forget to mention that I have frequently found a condition of full hepatization—complete cellular infiltration of the alveolæ—in the alveolæ in the immediate vicinity of the malleosic diseased bronchi, as an indication of intensive irritation, and that the gelatinous infiltration was first apparent outside of these changes at a considerable distance from the bronchi. These processes must be classed with those of broncho-pneumonia, the actiology of which cannot easily escape us if we take into consideration to concomitantly existing malleosic bronchial complications.

Primary gelatinous infiltration is a more extended process, and develops independent of any existing malleosic complications of the pulmonary tissues. The connection with the changes of malleus fails by protopathic gelatinous infiltration, and it is the presence or absence of this connection which I must demand respect in fixing a deferential necroscopical diagnosis; for the primary inflammatory processes may (as the history of pneumonia teaches), present a lobular extension. With regard to the termination of gelatinous infiltration, only those forms can here interest us which have to do with the primary form of these

complications, as a consideration of a course of deuteropathic gelatinous infiltration cannot self-evidently come within the range of this paper.

Gelatinous infiltration is an inflammatory process in parts of the lungs which had a special predisposition to the same. *The extended forms of this complication will, as a rule, regularly make a lethal termination;* have we yet to do with a pneumonic process in cachectic individuals? Nevertheless, I have seen healing take place in such cases, where an entire anterior lobe of the lungs, or the median-inferior part of a lobe was diseased. The expectoration of the viscid and cellar mass in the alveolæ is impossible, because the lungs are not elastic enough, the bronchi obstructed, or the respiratory muscles too weak. Restitution results through fatty metamorphosis of the cells contained in the alveolæ. This process takes place, however, very gradually by horses, so that we are unable to demonstrate, at any one time, great quantities of fatty detritus. I have not yet seen by horses the termination described by Buhl as "*chronic fatty metamorphosis*," in which the alveolæ project from the gelatinous infiltrated tissue as small, yellowish, opaque points. This difference shows nothing more than that the fatty metamorphosis of the cells in the pulmonary alveolæ of man takes place almost at one time, while by horses it results gradually. By this transformation, there is present a fluid in the alveolæ much resembling milk, and which may be pressed out of the alveolæ. Microscopical investigation demonstrates the presence of numerous granulation (molecules) in this fluid. This fluid is now resorbed, and air may again enter the alveolæ, when chronic processes on the bronchi—bronchitis and peri-bronchitis—have not in the mean time taken place. Chronic bronchitis leads to sclerosis of the bronchial parietes. The thickness of the parietes of the bronchioli is, however, so insignificant, that induration of the lungs can only take place when the surrounding connective tissue is at the same time complicated. This connective tissue encloses the bronchi, arteries, and veins. It is the capsula communis, and the inflammatory processes taking place in the same is designated as *peri-bronchitis fibrosa.* Around the bronchi are formed thick, white masses

making the parietes of the same inflexible, so that they lose their ability to contract or distend. The consequence is that the mass secreted by the bronchial mucosa stagnates and suffers many changes—condensation, tyrosis, etc. Bronchio-stenosis develops on account of the shrinking of the hyperplastic connective tissue. The transverse section of a bronchus which has been complicated by peri-bronchitis fibrosa, presents the appearance of a small, white ring, the opening of which is, by many, scarcely to be recognized, which is filled with a mucous-like tyrosie, or other mass. Those parts of the lungs which stand in connection with bronchi thus changed, cannot contain any more air; they retract and remain useless. A permanent atrophy, or chronic atelectasis of the pulmonary tissues, is developed. The atelectatic tissue is characterized by its desiccated state. The chronic inflammatory processes may extend from the peri-bronchial to the alveolar tissue, and generates an induration of the lungs. The size of the indurative nodus corresponds to the extension of the indurative process. A lobulis, or several noduli, may be complicated thereby. Around these nodes, which are often colored by the horse, is to be seen atelectatic tissue.

Further, the pleura becomes sclerotic, and from the changed pleura we can follow fibrous threads, following the direction of the interlobular connective tissue in the lungs. This change hinders the extension of the parts of the lungs thus complicated, and causes shrinking of the same.

In other cases a chronic pneumonia develops (carnification), in which the alveolæ also participate, and the lung becomes completely impassable. This chronic pneumonia is by no means seldom by the horse, and leads to the formation of noduli of a white color and variable size, which may be easily complicated with those of malleus. Buhl designates this change as "pulmonary cirrhosis."

This slight contribution to the pathology of pulmonary disease is based on long-continued autopsie studies of my own—the results of which this is only a skeleton—which I have endeavored to place before my readers in a practical scientific form. The question of malleus I have only touched, where it seemed abso-

lutely necessary for my purpose, in discussing the question of gelatinous infiltration. (Schutz).

EDITORIAL.

PROGRESS OF VETERINARY SCIENCE IN THE UNITED STATES.

In the pages of this number of the Review we publish the copy of an act which was passed by the Legislature of the State of New York, and that of a bill now before that honorable body for legislative action. The first relates to contagious diseases; the second is entitled an Act to regulate the practice of veterinary medicine and surgery in the State (New York).

If we go back to the conditions in which contagious and infectious diseases, and specially glanders and farcy, were dealt with but a few years ago, when animals thus affected were almost allowed to be exposed for sale, to travel through the streets of our city, to be sent across our ferries to neighboring States without danger or fear of being molested or interfered with; and when we look at the results to be reached by the passage of that act, veterinarians cannot but feel that a step towards progress has been made. For what branch of veterinary medicine is more important thanthat which is connected with general public health—than that of comparative sanitary medicine. And of course who else but they will be in the foremost ground to assist the civil authorities in getting rid of these diseased animals, specially now that by legislation, as in the city of New York, they are obliged to report to the health authorities any case of this kind which may come under their observation.

But if we look upon the second bill, which calls for a better regulation of the practice of veterinary medicine, oh, then, it seems to be almost a wonder that at last the veterinary profession should have been sufficiently appreciated by some to induce them to work in behalf of veterinary medicine and present that bill at Albany.

To the Society for the Prevention of Cruelty to Animals the

veterinary profession of the State of New York is indebted for the step thus taken—and it is but natural that it should come from that honorable body, for both the veterinarian and the officers of that society ought to work together.

The bill may not be as perfect as many would like it, but if passed, it would be of such benefit to the profession that even with its imperfections no reasonable veterinary practitioner could find umbrage to it. All no doubt will see the necessity of standing by it. As we go to press we are told that a deputation of physicians and *horse doctors* are to be received before the committee to which the bill was referred, to protest against it. But we do not feel anxious about their doings. First, we doubt if regular physicians, men of education, would dare to speak against this bill, for in so doing they would place themselves beyond the reach of professional scientific advancement; and if so-named *horse doctors* join them, we cannot feel afraid of their attempts. None in the profession, be it a graduate or a self-made man, can object to it; it asks for either nothing to which they can object; to the former it gives a protection to which his education entitles him, and to the *self-made man* it gives an opportunity of obtaining a qualification, a recognition of his ability and knowledge, which he cannot help but recognize as due to him, and which he deserves. It seems to us that all objections to the bill from such parties would be nothing but an acknowledgment of an unfit condition for their pretended ability and skill. But, no, we cannot admit that the bill will be opposed with any chance of success, and if it passes there is no doubt that other States will soon follow the example given by New York State, and then veterinary science will stand in America on a higher position, and will become protected better than in any other country in Europe.

If that is not progress, what is it?

VETERINARY SCHOOLS IN NORTH AMERICA.

Canada is much smaller than the United States. Its population is much smaller than ours. Its wealth in domestic animals cannot compare with ours, and still she is far ahead of us in the

establishment of that department which looks after her live stock.

Toronto, with her veterinary school, Montreal with her veterinary college, turn out yearly a number of graduates, whose life is to be devoted to the welfare of her horses, cattle, pigs, &c., and now Halifax comes and joins them by the opening of her veterinary institute. Three veterinary institutions! While in the United States, in our Republic which, with right, boasts of her standing in science, in art and in manufactures, &c., we have only .... two veterinary colleges, and both in the same State and in the same city. Montreal and Toronto are already old schools; they have done their proofs; they are to-day a success, which every year increases. Halifax, with her new elected board, comes now in the field and may prove a serious competitor. But in the United States we remain at a stand-still. Why is this? Is it because Canada is English, and that she takes from her mother country the respect and appreciation that veterinarians enjoy at home. Why should she grant annually to these schools funds to help them to not only carry on their work but to improve it?

To the student of political economy this will give an opportunity for serious thoughts and bring to his mind the necessity already so well pointed out in the papers of Messrs. Billings and Paaren, and also in the pages of the *Review*, viz., that of encouraging the establishment of a national veterinary school.

JURISPRUDENCE.

VETERINARY JURISPRUDENCE.

Read before the Montreal Veterinary Medical Association, by D. McEachran, F.R.C.V.S., President.

CONTINUED FROM PAGE 42, VOL. II.

"It would appear that under the English law no time is specified within which the action must be taken, if it can be proved that the unsoundness existed at the time of the sale. 'No length of

time elapsed after the sale will alter the nature of contracts originally false; though the not giving notice will be strong presumption against the buyer that the horse at the time of the sale, had not the defect complained of, and will make the proof of his part more difficult.' According to Dejean ('Action Redhibitoire') the time allowed by the French law to bring an action to return a horse for specific ophthalmia and epilepsy is thirty days, and nine days for all the other diseases which constitute unsoundness under their laws. The time to count from the time of delivery, and if the buyer neglects to take action within that time, the sale must hold good. The date of purchase, whether the animal is removed or not, unless the seller distinctly refuses to deliver it, is the date of delivery, and the risk is the purchaser's, even if he has not been paid for, or dies at his place, except he dies from any of the legal unsoundnesses. Our own common law establishes no certain number of days within which action has to be taken—1530—C. Code. 'The redhibitory action resulting from the obligations of warranty against latent defects must be brought with reasonable diligence, according to the nature of the defect, and the usage of the place where the sale was made;" thus leaving the question, as to time, to the judgment of the court, as to whether or not the purchaser has acted in the matter with due diligence.

Before leaving the subject of warranty I will read the following decision lately given in a horse case in England relative to the wording of a warranty: "The decision of the court in the case of 'Anthony vs. Halsted' deserves the attention of horse-owners, as teaching a practical lesson in the construction of written warranties.

"The plaintiff bought a horse of the defendant, and on payment of the price obtained a receipt and warranty in this form: 'Received, from C. Anthony, Esq., the sum of £60 for a black horse, rising five years. Quiet to ride and drive, and warranted sound up to this date, or subject to the opinion of a veterinary surgeon.' This horse was not quiet, so Mr. Anthony brought his action for breach of warranty in the Hereford County Court. The judge ruled that the warranty extended to quietness as well

as soundness, and the jury found a verdict for the plaintiff. Last week the Common Pleas Division ordered a new trial, the judges holding that the County Court judge had misconstrued the receipt, and that the allocation of the words showed the warranty to apply only to soundness. This construction of the document in question is in accordance with decisions given on former occasions when the identical point was in dispute. In 'Dickinson vs. Gapp,' tried in 1821, the warranty upon the breach of which the action was brought ran thus: 'Received £100 for a bay gelding, got by Cheshire Cheese; warranted sound.' The plaintiff proved that the horse was not by Cheshire Cheese, but Chief Justice Dallas held that the warranty was confined to soundness, and nonsuited the plaintiff. In 'Budd vs. Fairmaner' the receipt on the sale of a colt contained the following words: 'For a gray 4 years old colt warranted sound in every respect.' The colt turned out to be only three years old, but it was held that the soundness only was warranted, and the plaintiff was nonsuited. These decisions show clearly how written documents of the above kind will be construed in courts of law, and it cannot be contended that any violence is done to the language in which they are expressed. If the words mean anything, they mean just what the courts held them to mean, and nothing else. It may be urged that the three plaintiffs in the above actions would not have bought if the horses had not been stated respectively to be quiet, by a particular sire, and of a certain age.

The maxim, *expressum ficit cessare tacitum*, will explain why these statesments were disregarded. Whatever conditions the word 'warranted' did not apply to could not be reckoned as integral parts of the contract of sale. In the above cases the sellers *represented* that the horses were quiet, of a certain breed, aud of a particular age, but they *warranted* they were sound. In order to hold a man liable if his representations turn out incorrect, it is necessary to show that he knew it was false at the time he made it. In selling horses it often happens that the owner has no personal knowledge of certain facts beyond what he was told when he bought; and if he sells on the same representation as he received, he is not liable, provided, of course, he

has not discovered the truth in the meantime. On the other hand, a seller is liable, if any part of the warranty turn out to be untrue, whether he knew of the defect or not, or even if he had no means of knowing. If a man choose to warrant quiet in harness a horse he has never driven, he must take the consequences of his own imprudence. It is at times difficult to distinguish warranty from representation. The rule of law is that every affirmation at the time of sale is a warranty, if it appears to have been so intended; but in the cases we have noticed this intention has been plainly omitted. And if he sells on the same representation as he received, he is not liable, provided, of course, he has not discovered the truth in the meantime. On the other hand, if any part of a warranty turns out to be false, the horse is returnable to the vendor."—*The Field.*

In a new country like this, where horses are so frequently changing hands, and where, I am sorry to say, dishonest practices and tricks of the trade are nearly as well known as in older and more pretentious countries, we as members of that profession who must act as the go-between, for evident reason require to have an intelligent knowledge of the law of sale and warranty. By such knowledge we will very often have it in our power to settle difficulties which otherwise would lead to troublesome and expensive lawsuits—for, as has been truthfully remarked, "Lawsuits originate less frequently in the positive dishonesty and bad faith of the litigants than in their gross misconception of each other's rights and liabilities." The cumbersome, tedious, and expensive legal processes which clog the machinery in all horse cases in this country are a disgrace to this advanced age, and in the majority of cases, a person would be far better off to put up with the loss incurred by the fraud, than spend time and money in a vexatious and uncertain litigation—nor is the working of the law of warranty in England much better. Thus in "Sydney's Book of the Horse," Col. Kingscote, C.B.M.P., Equerry to H.R.H. the Prince of Wales, who has the management of H.R.H.'s studs, is reported to have said that "the working of the English law of warranty very much discouraged horse-breeding among plain farmers;" for instance, he says, "A man buys sev-

eral horses at a fair and takes a warranty; when he gets them to London, if he thinks he has made a bad bargain in any one of them —given too much money for the horse—he gets a man to examine him and find some defect he construes into unsoundness. He then sends a certificate down to the person in the country from whom he bought the horse. The breeder, a farmer, writes back to say 'he was perfectly sound when he left him,' the correspondence goes on, and the dealer writes to say he shall send the horse back on such a day or else send him to be sold. Frequently, to save expense, and frightened at the cost of a lawsuit, the farmer says, 'if you will keep the horse, you can have him for half the original price.' There are hundreds of these cases." The same author, on the authority of Mr. E. Green, M.P., relates a case in which a London dealer bought a horse in Lincoln fair and gave a high price for him. The usual letter came down, saying the horse was unsound. The whole county backed their friend, and the farmer defended the action. They employed a detective to worm out the secrets of the dealer's place, and found that he had made £1500 by letters of this kind, because many men, rather than have any bother, would send him £20 or £30. The dishonesty of the horsedealer is proverbial, even from the earliest times; an old writer says, "as mortar sticketh between stones, so sticketh fraud between buyers and sellers of horses." Butler, the author of Hudibras, says: "A horse-dealer is one who reads horses, and understands all the virtues and vices of the whole species. He makes his first application to a horse, as some lovers do to a mistress, with special regard to eyes and legs. He has more ways to hide decays in horse-flesh than women have decays in faces, with which oaths and lies are the most common accompaniments. He understands the chronology of a horse's mouth most critically, and will find out the year of his nativity by it as critically as if he had been at the mare's labor that bore him; and he is a strict observer of saints' days, only for the fairs that are kept on them." I quite agree with Nimrod, who says, "there is a good deal to be said in mitigation of the general opinion, that an honest horse-dealer is a character written in the dust;" and there is a saying amongst the fraternity that helps to

bear them out: "If one buy the *devil*," they say, "we must sell the devil." I also agree with Prof. Gamgee: "It is a mistake to suppose that all the sharp practice is on one side," he says, "I have as high an opinion of the honesty of the better class of horse-dealers, as of gentlemen who habitually buy and sell horses. It is a wonderful fact, but yet it is a fact, that the horse, next to man, one of the noblest objects in creation, appears to have a tendency to corrupt almost all who deal in him."

"A horse-dealer on his defence, goes into a court of justice, like a dog, with a bad name, by the influence of which, coupled with the want of practical knowledge in the jury, and perhaps the prejudices of all parties, he does not always obtain justice. It is generally taken for granted that he must have known of the unsoundness or vice in dispute, which circumstance, coupled with those before mentioned, and the contradictory statements of ignorant and incompetent witnesses, operate strongly against him. It too often happens, however, that a mass of perjury on one side or another, is produced in court, disgusting to all persons of decent character, and such as could not well be surpassed under the dispensation of the dark ages, which assumed to deprive oaths of their validity, and sin of its guilt."

[TO BE CONTINUED.]

REPORTS OF CASES.

SINGULAR INJURY TO A HORSE.

BY ROBERT WOOD, V.S., OF LOWELL, MASS.

In the summer of 1869, while Lent's Circus Company were performing in Lowell, at an evening performance on Monday, while Mr. Cook was riding in his four-horses act, one of the leaders fell, and the others in consequence tumbled over him. The leader was, to all appearances, badly injured, being, for some minutes at least, unable to rise; but being assisted by the strong arms usually identified with a circus, he was placed upon his feet

and then taken from the ring, and shortly after to the stable at the Washington House, about one hundred rods distant, and, as I am informed, walked pretty well. Shortly after reaching the box stall in the stable, he laid down, and never afterwards was able to rise. The proprietors, thinking the horse permanently injured, gave him to the hostler, with the understanding that if he recovered they were to have him by paying handsomely for him. The parties having the care of him considered him injured in the loins, and treated him accordingly. The next morning, however, the hostler consulted me, and upon making a careful examination I found there was no injury to the back, and as the horse at this time was unable to raise his head but a few inches from the floor, although able to eat, I continued my search for the trouble, and soon discovered a slight swelling and tenderness over the third cervical vertebra, and concluding this to be the seat of injury, treated the case as one of severe injury to these parts. But from the appearance of the animal at this time, I certainly did not anticipate such an injury as it subsequently proved to be. From this time until the Saturday morning following, the treatment consisted of fomentations by blankets wrung out of a hot decoction of hops, our patient eating grain food and taking a fair quantity of water from a bottle. With being turned over occasionally during this time, he seemed quite comfortable, and having lived so long I certainly prognosed ultimate recovery. Not under the circumstances before described, could I entertain the idea of fracture, only as a possibility. On visiting my patient early Saturday morning, I found him to all appearances as well as the night before: but on returning to the stable at 9 A. M., I found the horse dead. The hostler said he left him eating, at seven o'clock, and when he returned at 7:30 he was dead, and had died apparently without a struggle. We made an autopsy, and found a transverse fracture of the third cervical vertebræ. I accounted for his sudden death from an effort to move sufficient to displace the broken bone, which had not taken place earlier. Extravasated blood was found around the seat of injury, as well as in the spinal channel.

LEGISLATION.

An Act to Regulate the Practice of Veterinary Medicine and Surgery in the State.

The People of the State of New York, represented in Senate and Assembly, do enact as follows:

Section 1.—The Governor of this State shall annually appoint a Board of State Examiners and Censors in Veterinary Medicine and Surgery. Such Board shall consist of five members; three of whom shall be graduates of a duly incorporated veterinary college, or veterinary department of a medical college or university, and two of whom shall be physicians or surgeons duly licensed to practice and members of a county medical society in this State.

Section 2.—Every person who shall be appointed a member of such Board shall without delay file with the Secretary of State the certificate or notice of his appointment, together with an endorsement in writing thereon, signed by him, of his acceptance thereof.

Section 3.—Such Board shall meet at least three times during the year, at such times and places as it shall designate. Notice of the time and place of each meeting shall be published in the State newspaper at least two weeks previous thereto. Three members shall constitute a quorum for the transaction of business.

Section 4.—Such Board is authorized to grant licenses to practice veterinary medicine and surgery in this State to such persons who shall apply therefor, upon their passing an examination to the satisfaction of a majority of such Board upon the subjects of anatomy and physiology of the domestic animals, chemistry, practice of veterinary medicine, veterinary surgery, veterinary obstetrics, veterinary materia medica, pharmacy and therapeutics. Such Board shall keep accurate minutes in writing of each examination, with a separate written opinion of each examiner as to the acquirements and merits of each candidate.

Section 5.—Every candidate, prior to his examination, as

above provided, shall pay to said Board the sum of five dollars, to be equally divided between the members of such Board, who shall receive no other or further compensation for their services.

Section 6.—Every such candidate, after submitting to such examination to the satisfaction of such Board, or a majority of the members thereof by whom such examination was made, shall be entitled to receive a license from such Board to practice veterinary medicine and surgery within this State, which license, when granted, shall continue until revoked, as hereinafter provided, and shall be in writing duly signed by the members of the Board approving thereof, the signatures whereof shall be duly attested by the Secretary of State under his seal. The Secretary of State shall also keep an accurate record of all persons to whom licenses are issued, pursuant to the provisions of this Act and of all revocations thereof, with the dates thereof respectively.

Section 7.—Every person possessed of a diploma, issued to him in due course by a duly chartered or incorporated university or veterinary college, or veterinary department of a university of medicine or surgery, upon exhibiting to such Board such diploma properly authenticated, shall be entitled to the license provided by this Act. Such Board may at any time require any person practicing, who shall practice veterinary medicine or surgery in this State, to satisfy it that he is legally authorized thereto; and it shall keep in a proper book, to be by it for that purpose provided, a record of all such requisitions, the result thereof, and its action thereon.

Section 8.—Any license granted by such Board, pursuant to the provisions of this Act, may be revoked by it at any time or by the Supreme Court of this State, upon petition and notice, and for cause shown.

Section 9.—Any person who shall practice veterinary medicine or surgery in this State, who shall not at the time be duly licensed pursuant to the provisions of this Act, shall be guilty of a misdemeanor.

Section 10.—This Act shall take effect on the first day of August, 1878.

LAWS OF 1878, CHAPTER 28.

An Act Relating to Diseased Animals.

Passed February 23d, 1878, three-fifths being present.

The People of the State of New York, represented in Senate and Assembly, do enact as follows :

Section 1.—Any person who shall knowingly sell, or offer for sale, or use, or expose, or who shall cause, or procure to be sold, or offered for sale, or used, or to be exposed, any horse or other animal having the disease known as glanders, or farcy, or any other contagious or infectious disease, by such person known to be dangerous to human life, or which shall be diseased past recovery, shall be guilty of a misdemeanor.

Section 2.—Every animal having glanders, or farcy, shall at once be deprived of life by the owner, or person having charge thereof, upon discovery or knowledge of its condition; and any such owner or person omitting or refusing to comply with the provisions of this Section shall be guilty of a misdemeanor.

Section 3.—This Act shall take effect immediately.

ONTARIO VETERINARY COLLEGE.

ANNUAL EXERCISES.

The closing of the session at the Ontario Veterinary College, took place in the beginning of April.

The Board of Examiners consisted of practitioners of human and veterinary medicine in Canada. The following gentlemen were awarded diplomas:

S. G. Anderson, Tottenham; L. P. Chase, Peoria, Illinois; J. R. Deacon, London; W. F. Deer, Wooster, Ohio; G. Falls, Ottawa; S. Haggard, Lexington, Ky.; C. Hand, Alliston, Ont.; H. Heckenberger, Catasauqua, Penn.; G. P. Hinman, Cobourg, Ont.; J. Humphries, Tucknow, Penn.; W. Jex, Brantford; A. Moore, Guelph; J. McKerracher, Highgate; J. V. Newton, Barrie; S. P. Palmer, Toronto; B. A. Pierce, Creston, Illinois;

H. Sutterby, Seneca Falls, N. Y.; A. N. Smeall, Toronto; E. R. Smithers, St. Louis, Mo.; A. R. Stephenson, Cobourg; J. Waddell, Seneca; L. E. Wheat, Burdett, N. Y.; G. Theobald, Feeswater.

The following prizes were given:

Junior Class—*Chemistry*, 1st Prize—W. Rose. Honors—S. Foelker, J. Gemmel, F. C. Grenside. *Anatomy*—Silver Medal presented by the Agricultural and Arts Association—S. Foelker. 2d, E. Prentice; 3d, J. C. Rutherford. Honors—T. Fisher, J. Frink, F. C. Grenside, W. Rose.

Senior Class—*Breeding and Management of Stock*, 1st Prize, given by Hon. S. C. Wood, Commissioner of Agriculture—S. P. Palmer. 2d and 3d, presented by the Agriculture and Arts Association—G. P. Hinman, J. V. Newton.

Pathology—Silver Medal presented by the Ontario Veterinary Medical Association—G. P. Hinman. 2d, W. Jex; 3d, H. Sutterby and S. P. Palmer. Equal Honors—L. P. Chase, F. W. Derr, G. Falls, J. Humphries, J. V. Newton.

Physiology—1st Prize, L. P. Palmer. Honors—G. Falls, W. Jex.

Chemistry—1st Prize, H. Sutterby. Honors—G. P. Hinman, J. Humphries, S. P. Palmer, E. Smithers, L. E. Wheat.

Entozoa—1st Prize, J. V. Newton. Honors—S. G. Anderson, G. P. Hinman, A. N. Smeall, H. Sutterby.

Materia Medica—1st Prize, S. P. Palmer; 2d, W. Jex and G. P. Hinman. Equal Honors—J. Humphries, E. Smithers, H. Sutterby.

Anatomy—Silver Medal presented by the Agricultural and Arts Association—H. Sutterby; 2d, W. Jex; 3d, S. P. Palmer. Honors—G. Falls, G. P. Hinman, J. N. Newton. Gold Medal given by the Ontario Veterinary Medical Association for the best general examination—W. Jex.

MEETINGS OF SOCIETIES.

NEW YORK STATE VETERINARY SOCIETY

The regular meeting of this Society for March was held on the evening of the 13th, in the Cooper Institute, Eighth street

and Fourth avenue, New York City, with the President, Dr. Robertson, in the chair. Members present were Drs. Liautard, Lockhart, McLean, Burden, Bell, Hopkins, E. Nostrand, P. Nostrand, Coates and Holcombe. On motion, the Secretary was ordered to strike from the roll the names of delinquent members. Dr. Samuel S. Field, William H. Wray and Alvord H. Rose were proposed for members by Dr. Holcombe. Mr. L. McLean, of Brooklyn, read a paper on contagious pleura-pneumonia, which excited a lengthy and spirited discussion between Drs. Liautard, Robertson, Lockhart, Bell, Holcombe and the essayist. Dr. Liautard, asked if, in opposition to the opinion of the essayist, the prophylactic treatment of inoculation would not be attended with better results than some authors will concede, and better than most practitioners are taught to expect. He thought that there was a probability of the great fatality attending the essayist's experiments, being due to septicæmic poisoning instead of the induced pleura-pneumonia. Dr. Robertson believed that the inoculation was the true method of treatment to adopt when we consider the limited mortality attending this operation as practised on the continent. He believed that the disease would not be communicated after the febrile stage had passed, and also that in inoculation it was necessary there should be the usual local manifestations of the disease to render the animal proof against infection. Dr. Lockhart doubted the efficacy of inoculation, especially in Scotland, and thought "stamping out" the most effective treatment. L. T. Bell questioned the possibility of determining by a *post mortem* examination, as claimed by the essayist, whether a recovered case had been one of sporadic or contagious pleurpneumonia. A. A. Holcombe called attention to a recent outbreak of this disease in the southern portion of Hunterdon County, N. J., and cited the fact that pleuro-pneumonia is rapidly spreading over that State, and he thought the time was rapidly coming when we will be called upon to prevent its further progress. He believed from his experience of an outbreak in Somerset County, N. J., during the summer of 1874, that cases of *apparent* recovery were capable of communicating the disease a considerable time after the local symptoms had subsided, and

asked "In inoculation, may not a blood poisoning sufficient for protection against further infection be induced without having any perceptible local manifestations?"

L. McLean thought the pulmonic and pleuritic lesions were an essential—an invariable accompaniment of inoculation, for he had lost all cases upon which he had experimented. He believed no animal would thrive after having the disease, unless the seeds of the disease had entirely left the body.

A vote of thanks being tendered the essayist for his interesting paper, and Dr. Liautard appointed to read at the next meeting a paper on "Inoculation," the meeting adjourned to meet at the lecture room of the American Veterinary College, April 11th, at eight o'clock.

J. D. Hopkins, D.V.S.
Secretary.

The regular monthly meeting of the New York State Veterinary Society, was held at the American Veterinary College, Thursday, April 11th, 1878, at 8 P. M. The President, Dr. Robertson, occupied the chair. Members present: Messrs. Liautard, Lockhart, Burden, Coates, Holcombe, McLean, Fields, and Hopkins. Minutes of the last meeting were read and adopted.

The following gentlemen were elected to membership: S. S. Field, D.V.S.; W. H. Ray, D.V.S.; and Alvord H. Rose, D.V.S.

Dr. Lockhart proposed for membership Edward Heard, V.S., graduate of Edinburgh.

It was moved and seconded, that no vote of thanks shall be tendered an essayist until after the discussion. Moved and seconded that the members of this Society exert themselves to induce all *regular* veterinary surgeons to join this Society. Carried.

Dr. Liautard read a paper giving the statistics of continental veterinarians during a series of experiments on inoculation of cattle to prevent the spreading of epizootic contagious pleuro-pneumonia. After stating first, that he did not wish to be understood to be looked upon as the champion of inoculation, as he never had an opportunity to test it by himself, he could not, however, ignore the magnificent results obtained in Europe in late years. Giving

the definition of the word inoculation, and the results of the operation, with the description of the lesions found in animals who had died from it, proving that in many instances lesions were found which proved undoubtedly the general effect upon the whole organism, the Doctor passed in review the statistics obtained in France, Belgium, Holland, Germany, and Italy, and in recapitulating said, "If we recapitulate, we find that out of 22,348 inoculations with known results, 5,476 gave no symptoms, or 24½ per cent.; and 16,872 presented symptoms, or 75 per cent. We can then say that three-quarters of the inoculations were successful." In relating the sequelæ following these operations, Dr. L. remarked, that out of the number of known results, 1,582 lost their tails, 53 had gangrenous swelling, 490 died, and that 2,214 took the disease afterwards.* The conclusions of the paper were, that prophylactic inoculation was not to be used in stables where the disease did not yet exist, and generally in a country where it had just been introduced; that it was the duty of the sanitarian to defend these prophylactic inoculations, and if they were found useful the animals operated ought to be submitted to the same quarantine as those of a stable already infected; that the inoculation was powerless to stop the disease in incubation, and would not prevent the natural course of the disease, but that it created an immunity for animals which would have been affected only at a later period; and that if it was to be put in practice, it should be performed entirely and only by men of intelligence and of education, and if possible only by veterinarians.

The discussion following was kept up by most of the members present, and after a vote of thanks passed for the author of the paper of the evening, the chair having appointed Dr. Holcombe as the essayest of the next meeting, the Association adjourned.

J. D. Hopkins, *Secretary.*

UNITED STATES VETERINARY MEDICAL ASSOCIATION.

The regular semi-annual meeting of this Association was held at Young's Hotel, Boston, Mass., Tuesday, March 19th, 1878.

* Figures taken from Zundel.

C. P. Lyman, President, called the meeting to order at 11.30 A. M., with the following members present: W. Bryden, J. B. Cosgrove, J. C. Corlies, C. Colburn, O. H. Flagg, A. A. Holcombe, C. H. Hall, A. Liautard, M.D., A. Lockhart, C. H. Peabody, J. L. Robertson, M.D., W. Saunders, R. J. Saunders, J. S. Saunders, E. F. Thayer, M.D., T. S. Very, and R. W. Wood.

The Committee on Intelligence and Education reported progress in their endeavors to call a congress of the teachers of veterinary medicine in America, and received instruction from the Association as to their course in the future.

Prof. D. McEachran, F.R.C.V.S., of the Montreal Veterinary College, was elected to honorary membership; J. A. Brackin, V.S., of Pittsfield, Mass., J. C. Force, D.V.S., Newark, N. J., J. C. Malloy, V.S., Chelsea, Mass., and J. C. Fogg, V.S., Boston, Mass., were elected to membership.

Dr. Liautard, as editor, reported the condition of the AMERICAN VETERINARY REVIEW as highly satisfactory, and was granted his request to increase its size by the addition of ten more pages, and at the same time to reduce the subscription price to four dollars.

W. Bryden then read an interesting paper on "Spavin," which was discussed at length by Drs. Wood, Thayer, Liautard, Very, Lockhart, Boyden, and others. Dr. Liautard read a paper on "Intestitial Injections," by J. C. Myers, Jr., Cincinnati, Ohio, which was also commented upon by several members. Communications from B. McInnes, Charleston, S. C., and R. Laidlaw, Albany, N. Y., were read by the Secretary.

Drs. Wood, Liautard, Thayer, Cosgrove, and others reported numerous and interesting cases. At 5 o'clock P. M. the meeting adjourned, and the members were invited to the dining room, where one of those matchless dinners, always provided by the Boston members, awaited them.

A. A. HOLCOMBE, *Sec.*

COMMUNICATIONS RECEIVED.

C. B. Michener, Pennsylvania; G. Duncan, Canada; A.

Smith, Canada; E. Mink, Rochester; F. S. Billings, Berlin; W. Bryden, Mass.

EXCHANGES AND JOURNALS RECEIVED.

Live Stock Journal, Ill.; Hospital Gazette, N. Y.; Turf, Field and Farm, N. Y.; Daily Citizen, Canada; Massachusetts Ploughman; Medical Record, N. Y.; Mouvement Medical, Paris; Journal de L'Agriculture, Paris; Archives Veterinaires, Alfort, France; Country Gentleman, N. Y.; Scientific American, N. Y.; Zeitschrift der Thiermedicin, Munchen; Jahresbericht der Thierortnie Schule, Hanover.

PAPERS RECEIVED.

D. McEachran, on Veterinary Jurisprudence; C. B. Michener, Pleuro-Pneumonia; F. S. Billings, on the Development of Comparative Medicine.

AMERICAN VETERINARY REVIEW,

JUNE, 1878.

ORIGINAL ARTICLES.

A CONTRIBUTION

TO THE PATHOLOGY AND ÆTIOLOGY OF HUMAN AND ANIMAL VARIOLÆ; WITH SOME REMARKS ON INTRAUTERINE VACCINATION.

BY PROF. DR. O. BOLLINGER,

TEACHER OF PATHOLOGY AND PATHOLOGICAL ANATOMY AT THE ROYAL UNIVERSITY AND THE VETERINARY INSTITUTE OF MÜNCHEN.

From the German.

BY F. S. BILLINGS.

:o:

[The right to translate the above is reserved by the publisher, but on application to them, I at once received the most cordial permission from them, as well as from Prof. Bollinger, to whom in the name of the American Veterinary profession I hereby tender my sincere thanks. The original may be found in the " Sammburg Klinischer Vorträge" (a series of clinical lectures) of which this is No. 116. This collection is published by Messrs. Breitkopf and Haertel of Leipzig, and for their courtesy I can do no more than call the attention of those among us, or in the medical profession who read German, to this very excellent and in some respects, unequalled series, which comprises lectures on special subjects, which have been delivered, as well as others which will be delivered in the progress of time by many of the most noted specialists in Germany. The cost of each series is 15 marks, $4 a year, and comprises 30 lectures.—B.]

When we seek to systematize the pests of man and animals with regards to their original development and their reciprocal transmission to one and the other specie, we find it very conformable to divide them into three large groups: 1. *The known human epi and endemics;* 2. The purely infectious zoonoses of which some may be transmitted to man; 3. Those which in general affect both man and animals, to which especially belong the variolæ, and perhaps diphtheria.

Not only the individuals of the single species, but the latter also deport themselves in a very variable manner towards the contagia of these infectious diseases. While the animals remain to all intents immune from the epidemic diseases of man, even *cholera* and *typhus*, all assertions to the contrary, man is susceptible to the contagium of quite a number of animal pests; as examples, malleus, anthrax, rabies and aphthæ epizooticæ. We find very great differences with regard to the disposition (susceptibility) of the different species for the contagii of the zoonoses: while a succession of animal-species, inclusive of man possess an equal susceptibility for the contagium of rabies; and swine and ruminants possess a great susceptibility for that of aphthæ epizooticæ; man possesses but little, and solipeds and carnivora still less. Herbivora are very susceptible to the action of the contagium of anthrax, while the omnivora, inclusive of man, are much less, and carnivora have but a very slight disposition for the same. Malleus is in general limited to solipeds, the remaining animal creation, inclusive of man, having but a relatively insignificant susceptibility to the contagium of the same; cattle none. While the contagium of rinderpest sometimes affects sheep and goats, all other animals remain immune from the action of the same pleuro-pneumonia bovine contagiosa is limited exclusively to cattle as syphilis to man.

In this direction the variolæ offer the most attraction, because they not only attack man, but nearly all the domestic animals, and because of the genuine culture historical importance, which the artificial transmission of an animal variola to man has won in a prophylactic point of view; a service which has rendered the name Jenner immortal, in that the sting is thus, in part at least, removed from perhaps the most formidable scorpion which has tortured the human race.

It becomes us now to seek to acquire a general idea of the present stand of the variolic theory, from the standpoint of general pathology, and thereby to critically consider their reciprocal relation and especially their reciprocal transmission to other species and (vice-versa retrovacination). This territory is however so extensive, and many questions so imperfectly considered, that the result of our study must necessarily be more or less im-

perfect. However, I am convinced that from this comparative study of the variolæ, we shall gain a general idea, which will offer much of importance for the pathology of the same, as well as much of great practical value.

Before we undertake to consider the different form of variola in special, it may be well to consider some general principles, which may serve to guide us in our comparative consideration of the variolæ of man and animals. The previous plan, of looking upon the variolæ as they come to pass by the different species of animals and man, as of equal importance "auf gleiche Linie zu stellen," appears to me entirely unjustifiable. When for instance authors speak of and consider variola humana, ovina, caprica and canina as the same, and throughout analogous processes, they completely overlook the fact that the two first—those of man and sheep—represent well characterised pests, the continuity and descent of which in concrete cases is in general clearly manifest, *because "variola humana vera" always generates from pock diseased men*, and *"variola ovina" always proceeds from variolic diseased sheep.* As a rule we find but little difficulty in proving infection in these cases. The question is quite different with regard to variola caprina, canina, equina, and vaccina (bovina); they scarcely ever assume a pest-like form, they appear here and there in a form much more resembling sporadic diseases, they are limited to individuals, or at the most to single herds; they are infrequent occurrances. In my opinion it is not difficult to explain this fundamental differance in the eruption of the individual form of variola. After the eminent transmissability of the variolic contagii to other species has been confirmed, the most important question which then springs up in the consideration of the single forms, is what cause or causes lead to their generation? We have ever to decide, if *we have before us a variolic form peculiar to the animal species in question*, or one which has only been transmitted accidentally to the same, *as it were, a wandered form of disease.*

In the last case it would perhaps deport itself when a comparison is allowable—in a similar manner, as cysticercus cellulosae when present by man or dog, or when we meet with malleus or authrax by man. We may assume or not, that the contagium

of variola originally proceeded from one primeval form, yet it cannot be denied, that the contagium of *variola humana vera*, as well as that of *variola ovina*, possesses especial affinities, the first to the organismus of man, the latter to that of sheep, and that both diseases present themselves as well characterized forms in a natural historical sense, which may be perhaps related to each other; even homologous, but in no ways identical. And even though we may succeed, by inoculation of variola humana vera, or of vaccina upon sheep, in generating a disease by the latter, the phenomena of which strongly resemble those of variola ovina, yet we have by no means proven thereby, that variola humana, vaccina (bovina) and ovina are identical diseases.

From these general remarks, we will now give our attention more especially to our thema; and we find variola appearing *as a severe and general infection by man and sheep*, as a general, but weakened form again by man (variolois) and by swine; *as a light and local process by cattle and horses*, while the goat possesses a susceptibility as well for the general variola of sheep, as for the localized form of cattle.

In general we may consider the following as axiomatic, viz: *the domestic animals have either none or a very insignificant disposition to accidental infection from the contagium of variola humana vera.* This is amply proven by the history of every variolic epidemic, by which occasions enough are given to the infection of the domestic animals. I shall have occasion to notice the isolated observations of Ceely, Dinter and others, which make it probable, that a spontaneous, accidental, (not experimental) transmission of human variola to cattle is possible. Accidental transmission of human variola to monkeys has also been reported; also to swine, and lately it is reported to foals (Scholz.) During 1871 and 1872, a severe variolic epidemic was raging, and Scholz observed a pustulous exanthema by foals, at the same time and on the same farms where human variola prevailed, which continued and took a similar course with the latter, and which failed on farms in the same district where the same did not come to eruption. The exanthema was distributed over the entire surface of the body, and only in isolated cases was its eruptions anticipated

by the appearance of a general disturbance. The disease took its course in 16 to 20 days without any lethal terminations occurring. The transmission in this case was interposed by the variolic diseased attendants of the foals, and extended from the single infected foals to others. On the contrary, we are enabled to transmit *human variola* to *cattle* by way of inoculation, and thereby generate a disease strongly resembling the pure vaccina. We shall return to these very important experiments by the discussion of the genesis of variola vaccina, and will only here remark, that the variola vaccine won in this way generates, reinoculated to man, a local inoculatory pustule—*without general exanthema.*

Sheep possess an insignificant susceptibility to the contagium of human variola; the inoculation with variolal-lymph complicates only 10 per cent., and it is asserted that the disposition to the action of ovine, or vaccine, is not in any way checked thereby. (Marson and Simonds) Gohier and Lullin have also successfully transmitted human variola to sheep. Kuchenmeister bound before a sheep for an hour or so, a sack containing a shirt which a pock-diseased man had worn, and on the fifth day the appetite of the sheep was disturbed, and on the eighth a distinct variolic eruption upon the woolless parts of the median surface of the thighs was perceptible.

Viborg has reported the successful transmission of variola humana to swine, and the same has been proved by experiment in Alfort, where they covered a cow with clothing impregnated with the contagium of human variola, which fell off from the same, and came in relation with some swine, which tore, and, perhaps consumed parts of the same; in from 8 to 10 days a variolic eruption appeared upon the swine; none of the 40 to 50 present being exempt from the same. Zuelzer has recently been successful in generating artificial variola by monkeys, by means of inoculation with the blood of variola-diseased men, as well as by causing them to inspire air impregnated with contagium from eschars removed from the same. Greve also reports being successful in receiving positive results three times, from eight dogs which he inoculated from men. The three cases ended lethally.

HOW DOES MAN DEPORT HIMSELF TOWARDS THE DIFFERENT ANIMAL VARIOLÆ.

We observe that an accidental or spontaneous transmission of variola ovina to man does not take place, that the contagium of the same is not capable of causing infection if inspired by man, while by means of accidental injury, and occasional, but very seldom local infection of man with ovine may take place, which may be successfully re-inoculated to sheep. On the contrary, numerous experiences have proven that man is suceptible to infection from the contagium of variola vaccina or equina, let the inoculation be accidental or intentional; they cause a local infection, and protect, for a certain time, the infected man from an attack of variola humana vera. The accidental transmission of variola vaccina to the hands and arms of milkers belong to the most frequent occurences in this direction.

Most intimately related to human variola of all the animal forms is undoubtedly variola ovina, which we will now consider. When we subject both of these processes, which are in detail analagous, to a parallel comparison, we find the origin of both developed in darkness. The first report of the outbreak of variola ovina are derived from about the same time that variola humana first appeared in Europe, viz: The 15th century, (according to Fleming (Animal Plague) v. ovina broke out in England about 1275, and perhaps two years previously); they were probably introduced from the Orient, and are at present distributed over nearly the whole of Europe. Seldom in the southern parts of Europe, they are frequent in the eastern parts of the same, in Russia, Hungary, North Germany, France and England. Variola ovina presents in its phenomonology and its typical course the greatest correspondence with v. humana. After an incubation's period of 6 to 9 days, we may perceive upon the less-worked parts of the body, the eruption of an exanthema in the form of red spots, which shortly transform to noduli bullæ, and in the course of a few days to pustulæ. The latter becomes augmented, gradually desiccate, the entire process enduring three weeks or more. I must not forget to mention, that as Keher, Hallier, Cohn, and others in the lymph of v. vaccina and humana, so Klein has found

in that of v. ovina microparasites, as sphero-bacteria, some of them taking the form of streptobacteria. As the most malignant forms, authors designate confluent and hæmorrhagic variolæ, as complications; the development of abscesses, variolic eruptions upon the mucosæ, sometimes death from pyæmia, or tetanus. Young animals generally give way to the disease. The loss generally amounts to 25 to 30% of the diseased animals, in favorable cases 6 to 15%, in the most unfavorable 50% or more.

With regard to its ætiology it must be emphasised, that the contagium of v. ovina corresponds in every direction with that of v. humana. It is fixed and volatil (dispersing), and chiefly present in the contents of the pustules, less concentrated in the blood, with which successful inoculations may be made. It has an important degree of tenacity, and under favorable circumstances, retains its vitality in a stable, for a year or so. The infection takes place in the same way as by v. humana, that is, as a rule, by inspiring the contagium which is suspended in the air into the lungs. The same is also in a high grade transmittable by means of vehicles, and is also capable of inoculation. Most all sheep are disposed to the same, on 1 to 2% remaining immune, in occasional cases, 21%. Convalescent animals remain immune from further attacks. The abiogenitic origin of v. ovina, which was in times past pretty generally accepted, has, at present, scarcely as supporter.

Ovination has been and is one of the most important prophyilactica against v. ovina, and will even in details bear a close comparison with the variolation, introduced in the last century as a prophylactum of man against v. humana. The artificially generated v. ovina takes a much milder course than the natural; sometimes however a general exanthema developes in consequence of inoculation instead of the local inoculatory pustule. The loss by ovination ("Stutzimpfung"), which is generally performed on young sheep amount in favorable cases to only 0.03%, in unfavorable cases to 0.1—0. 2—12.0%, while by the so-called *peremptory inoculation* ("Nothimpfung")it amounts in favorable cases 1—2%, and in very unfavorable to from 10—18%. As is evident, these figures correspond with the results of human variolation, which also gives a loss of 0.3—1.0—2.0%. Self evidently the con-

tinual inoculation of young sheep must lead to continued outbreaks of ovina variola in a milder form, which conserves the contagium, and in all probability contributes to an extension of the ovina varolic pest; this form of prophylaxis is only then advantageous, when extended to all sheep without exceptions, and as carefully regulated by the veterinary police as if a natural pest were devastating the land. There is no doubt, that the frequent and devastating outbreaks of v. ovina in North Germany are owing to the custom of ovination which prevails there, (and which deports itself in the same manner as variolation in the last century), without subjecting the herds with the artificial disease, to the same restrictions to which such are subjected when the natural disease is prevailing. Ovination, has luckily by us in Germany, passed its days of bloom.

From the entire pathology of v. ovina, we see that the same and v. humana are throughout homologous diseases which, while corresponding in every direction, yet stand at present in no direct relation to each other. In no case has it been observed that v. ovina proceeds from v. humana, or vice-versa. An important property, which is however common to all forms of variola, appears to be, that vaccina, the relation of which to v. humana we shall presently discuss, has the ability to protect sheep from outbreaks of v. ovina.

[TO BE CONTINUED.]

TYPHOID FEVER IN HORSES.

BY A. DRINKWATER, V.S., ROCHESTER.

Read before the Rochester Veterinary Medical Association.

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During the summer of 1876, while practicing in Belleville, Canada, I had a great number of cases of typhoid fever in horses, a few of which I will endeavor to describe, also the treatment which was adopted.

My first case was a six-year-old horse, the property of a Mr. Vandusen, a mill owner of that town. The stable in which this

animal was kept is built on the water's edge, and was at that time completely surrounded by water so that planks had to be used to get out and in. I will just mention here that the water in this bay becomes covered with a greyish substance resembling frog spawn. It gets in this state about the middle of June and remains so until about the first of August; it is during this term that this disease is the most prevalent, and is almost entirely confined to the bay shores and to animals which have access to its waters.

I was called to the case just mentioned on the 2d of July. I found the animal lying and unable to rise, pulse about 70, soft and weak or thready; breath fœtid; tongue covered with a grey substance; pressure on larynx caused much pain; Schneiderian membrane was of a purple color; on passing my hand to the back part of the mouth I found the tongue much swollen; on withdrawing my hand the smell emitted was very offensive. I thought it advisable to try and get him on his feet, but before making the attempt I gave a powerful stimulant, got plenty of help and raised him on his feet, but he was unable to stand; he was let down and made as comfortable as possible. I ordered him to get a pint of good ale every two hours until the following morning, when I visited him again, got him on his feet, he being able to stand alone. He ate a little bran mash, passed his urine, which very much resembled linseed oil; his bowels being constipated, I gave him linseed oil, a pint and a half, also ℥i of pot. nit. and kept up the stimulants until the throat was stimulated with ammoniacal liniment; I left him standing, but the attendant said he did not remain on his feet long after I left. I visited him on the following morning and found him very much worse, pulse almost imperceptible at the submaxillary artery; breath very fœtid; tongue much swollen, and large quantities of ropy saliva coming from the mouth; extremities cold; respirations labored; I saw death was fast approaching; he lived about five hours.

A post mortem was held by myself and Mr. Newton, a student practicing with me at the time.

On opening the body the foulest odor was emitted; on removing the intestines they were found healthy; the stomach was

very much inflamed; kidneys slightly enlarged, but no inflammation had existed; the lungs were next examined and found slightly affected; the pharynx was covered with patches of ulceration extending to the back part of the tongue; the tongue itself was crusted over and had the appearance of being burned with a hot iron.

This animal had been allowed to drink this water; his feed was also made wet with it; there was also a mass of decomposed matter in his manger which, on being moved, had a very offensive smell.

The next case I had was a few days after. A cart horse was brought to me for examination. The owner said he was off his feet and appeared dull and weak, had no ambition, &c. I took his pulse, which was rather weak, although quite natural in other respects; the eyes were glassy and the tears were trickling down the face. I gave him ℥i spt. nit., ʒi p. gentian rad, combined with half a pint of ale and gave a powder of pot. nitras to be given that night, told the owner to let me know in the morning how he was. He came to me in a great hurry, said his horse was down and could not get up; I went and saw him; found him in the same arn, and unable to get up; gave him a stimulant, got him up, had him removed to another stable; this horse was fourteen or fifteen years old and only lived about 48 hours after I first saw him. He was also examined after death. The only difference to be seen was that the lungs were more affected in this than in the former case. From want of time the examinations were not carried out as closely as I would have liked. I am satisfied that the first case which I have described was caused by the use of this water, which is no doubt poisonous at the time this substance is floating in it; the second case may have been caused from atmospheric influences, although the animal had been allowed to drink the same water and get the same kind of food; the stable was also well cleaned out.

During the same summer I was called in consultation with R. H. McKenney, V.S., of Picton, Prince Edward Co., to a case of the same kind being caused by the animal drinking impure water from a small pond situated on his neighbor's farm; I found

the animal standing and large quantities of saliva coming from the mouth, of a greenish color; he would endeavor to drink, but could not swallow; pulse intermitting; there was evidently some derangement of the heart's action; this animal died during that night. I did not see him after death, but was told there was a great quantity of water collected in the pericardial sack. This gentleman had two more horses taken in the same manner, but they were saved; we went to the farm where the pond is situated and found three of his horses sick, showing the same symptoms as his neighbors', one of which died, the other got better. The disease did not make its appearance until after a heavy rain had riled the water. There is no doubt that drinking this water was the cause of this outbreak, because their stock were the only ones affected and the only ones that had access to this pond.

I will mention another instance where I believe ill drainage and impure air was the cause: Sometime during the winter of 1876–'77 there was considerable excitement in and around Belleville caused by a report that several valuable horses had died in the township of Huntingdon from some new or mysterious disease. A quack was employed to attend those cases; after losing four very fine animals, he threw up the sponge, saying he did not know what the disease was. I was then consulted and requested to send some medicine for a colt that was sick, but I declined, saying I could not treat so dangerous a disease as what I suspected without seeing my patient; he concluded not to have me go out because it would cost so much. He went home, found the colt dead and four others sick; he came back post-haste for me; I went out, got there about three o'clock in the morning, found quite an army of men and boys awaiting my arrival; I was hurried into the stable and found the air almost suffocating; I ordered the sick animals to be covered warm and the doors and windows thrown open; I then proceeded to examine my patients, two of which had partially lost the power of deglutition, breathing short; mucous membranes of a purplish hue; pulse about 70°, and weak; the muscles of the body relaxed; legs cold. I gave each one a good stimulant combined with ℥ i pot. nitras, bandaged the legs, stimulated the throat with ammoniacal liniment; in

about two hours each patient got raw lin. oil, 1 pint sod. bi-carb, ʒ ii; the after treatment consisted of hypo. sulp. sod. in two drachm doses twice a day, the stable well disinfected with carbolic acid. In a few days gave tonics composed of ferri. sulp and nux vomica.

On removing some of the flooring, the space between it and the ground was completely filled with efete matter which, there being no drain, could not get away; the floor overhead was also very tight; there had been eight horses confined in this stable with their heads together; one thing I remarked that all the horses on one side of the stable were the first victims. Why it should be so I am not able to tell.

A. Drinkwater, V.S., Ontario.

ETIOLOGY OF SPAVIN.

By WILLIAMSON BRYDEN, V.S.

Read before the United States Veterinary Medical Association.

In the disease of the horse's hock, known as bone spavin, one of its most important characteristics is a new formation of osseous tissue. Such new formations have been carefully studied, still, when occurring among the lower animals, especially the horse, differences of opinion are held by veterinary surgeons as to their ætiology and pathology.

The remote predisposing causes of bone spavin are, the natural peculiarity of form of limbs, and inferior quality of the tissues of the limb when the young animal happens to be the offspring of parentage *not* robust, but marked by disease, especially of their limbs.

Less remote causes are, acquired peculiarity of form of limbs and quality of their tissues, or defects and inharmonious and weak development—of a faulty functional and nutritive nature—especially among *young growing animals*, when the climate, character of the country, or the owner's method of management subjects

them to restraints incompatible with the robust development, especially of their locomotory organs.

Still less remote causes are work for which the animal is not adapted, and improper shoeing and management.

The causes of the new-born formation are repeated or continued irritation from strains, at the points of attachment of muscles, tendons, and ligaments to bone, and continued or repeated irritations or inflammations of the soft tissues of joints, connective tissue metamorphoses, injuries to cartilages, metamorphoses of cartilage, so-called physiological hypertrophy, interstitial new-born formation, wounds, direct injury to any joint from *over-work*, &c.

In all weak and imperfectly developed limbs, we find hoofs equally imperfect and liable to disease. From its peculiarity of being a "horny box," the hoof may either confine and interfere with the circulation and nutrition not only of itself, but of the whole limb; or it may, when weak either from want of tear and wear by exercise, or other cause, imperfectly protect the extremity, thereby exerting an influence on the limb quite as pernicious.

Such peripheral disturbances intensify previous weaknesses of the limb. In the young it may only impair, or arrest growth for a while, but in those older it leads to new changes in its form and position, and in the length and quality of its parts, if not remedied by proper management.

I have never yet examined a recently sprained hock, without finding changes in other part of the limb *and in the form of the hoof*, which must have *preceded* the pathological changes in the bones; consequently, whatever changes take place in other parts of the limb, *after* such new-born formations are apparent, whether concurrent or as the result of the new-born formation, they must have been *preceded* by an imperfect condition of the limb of equal if not greater importance. *There is such an uniformity in the shape of hoofs of recently strained limbs, that even when detected they will, when more closely studied, indicate the character of the hock with as much certainty as the horse's teeth now indicates his age.*

When the foot of a limb obnoxious to spavin is placed on the

ground it is seen by the way the shoe is worn that the weight is thrown on the outside toe; this is evidently to save the inner quarter or heel, which, if brought in contact with the ground in progression would cause pain. If, therefore, one part of the foot —the base—is doing more than its share of work, or doing it disadvantageously, it is equally probable that parts of the superstructure—the limb—are also placed at a disadvantage. In a limb thrown out of *balance* in this way, the position of the bones is changed; some of the muscles and tendons may shorten, while others relax. The metatarsal flexor, especially the tendinous portion and the ligaments, of whatever part of the hock is first affected at their insertions, are subjected to more than usual *strain*, sometimes accidentially violent perhaps, but in many cases an *often-repeated* or a *continued gradual strain*. In young limbs this may at first give rise to only a slight projection, or what might be called perhaps a *physiological* hypertrophy. When the irritation is kept up or some degree of inflammation, a greater area of the hock becomes involved and anchylosis more or less complete takes place according to the age of the animal, the richness or poverty of the tissues of the joints, the powers of resistance of the cartilages, and the demand made upon them.

In pathological new-born formations there is usually more or less degeneration of the original tissues, especially of the cancellated structures of the interior of the metatarsal and cuneiforms, sometimes atrophy appreciable of the metatarsal either from the new formations being developed at the expense of the original or form irregular or diminished supply of nutritive and vital power.

The spavin, therefore, is very seldom the only difficulty to be overcome or the cause of all the other changes. Consequently, if the conditions of the limb which predisposed it to spavin continues to exist unnoticed, the application of remedies only to the hock is patchwork as empirical as it is unscientific.

Discussion followed the reading of the paper:

ABORTION BY COWS.

By L. FRANK.

(Director of the Vet. Inst., and Prof. at the Agricultural Department of the Polytechnicum in Munich.)

Translated from the Deutsche Zeitschrift für Theirmedicin. Vol. 3, Part 5, p. 368.

By J. GERTH, Jr., of Newark, N. J.

Student of Veterinary Medicine at Berlin, Germany.

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We have diseases which endanger the life of cattle very little, and can hardly be compared with the dreaded pestilential diseases which attack them, but still they have an important effect on the regular management of breeding, and therefore seriously damage agriculture by their yearly sporatic appearances. Whilst the pestilences endanger or ruin the capital invested in animal life, there are others which not only destroy the profits expected from breeding, but also endanger the capital at the same time. To the latter belongs the frequent occurrence of abortion among cows and mares. Through abortion—although statistics in this direction are entirely wanting—the stock raiser often has to suffer a greater loss than by an epizootic disease. This is not only the case here, but also in foreign countries, where we are constantly hearing similar complaints. It is essential to the progress of medicine always to endeavor to seek the exact causes of diseases, for we can only by this means expect a successful treatment after we are intimately acquainted with the enemy with whom one has to fight. With abortion it is of particular importance that we should become well acquainted with its causes, since the whole treatment rests upon their removal and prophylaxes.

It is a well known fact that a large number of external circumstances, such as feeding with improper food and the like, can produce abortion. This form of abortion, although often acquiring great extension, especially through the distribution of unwholesome food, is what I would like to call "sporadic abortion," in opposite to the infectious abortion, which is produced by the action of infectious matter. The latter form of abortion receives the most attention at the present day, and is of very great importance

to agriculture. We will next look somewhat closer at the causes of sporadic abortion, in order to get a better understanding of the ætiology of infectious abortions. It is known that all stimuli producing a contraction of the uterus, can finally lead to abortion. A very important fact is, that the uterus, even in the various stadia of pregnancy, possesses a different degree of irritability, and that non-grovid uterus can only be contracted through strong irritations, whilst the least irritation is sufficient to produce this effect by a grovid uterus. It is known that the irritability of the uterus proportionally increases as pregnancy advances, and that these irritations, which are always found in the way, finally lead to contractions of the uterus and natural birth. We know that the irritability of the uterus increases with the temperature of the body, certainly within physiological limits, and decreases with decrease of the temperature. It is also known that the contractibility of the uterus can be annulled through carbonized blood. From the preceding, it may easily be understood that under all circumstances, where the temperature of the body is continually being increased, and where blood of the above mentioned character is being formed at the same time, abortion is liable to occur.

By quick movements of animals in pregnancy, by continual overwork, and in morbid conditions, where the excretion of carbonic acid is rendered more difficult, and where a higher temperature is existing, the case is the same; for example, by phthisis, influenza, etc. The frequent abortions following these conditions are easily explained. Colic and tympanitis are also often followed by abortion. Its origin is not so much dependent upon the large expansion of the intestine as in the retention of carbonic acid. It may be mentioned that the respiration in this case is doubtlessly rendered very difficult through the considerably expanded abdomen by pregnant animals, and would be rendered still more difficult where it is not counteracted by the powerful heart action and general hyperæmia.

Among pasturing animals, abortion is often produced to a large extent by their partaking of frosted grass, frozen potatoes, &c. Evidently the cause of this phenomenon is influenced by cold. Herrmann and Gantz have proved that severe anæmia of

the stomach and intestinal canal may arise through the direct action of cold, which may extend to the pregnant uterus. Uterine contractions may be released by sudden fluctuations in the quantity of blood supplying the uterus, or by a sudden appearance of anæmia.

Abortion is frequently caused by the partaking of blighted food. Some parasitic fungi which are found upon cereals are said to cause it. The rye-fungus (sclerotium clavus) is the most common. In some years' growth it is not only to be found upon rye, but also on other gramineous plants, such as broure-grass (bromus), English rye-grass (solium perenne) and others. One form of the rye-fungus, the "clariceps microcephala," is found in some districts in extraordinary large quantities upon red grass (sparganium). In countries where pregnant animals have to pass over the commons, or places where such straws have been outspread, it has been noticed that abortions are quite frequent. In countries where Turkish corn is cultivated to a very great extent, a fungus found upon maize has been noticed to cause abortion frequently. Twenty-four grammes of the latter given in two days, have been sufficient to cause abortion by two dogs. Other food, which has been spoiled by fungi, can also produce abortion. The cause of such abortions is generally to be sought in the fungi or their production. There are a large number of other poisons worthy of an organic nature, which act in a similar manner. It is very interesting to see how abortion generally sets in by the daily assumption of the smallest quantities of certain poisons. According to this, large doses of these poisons are not always necessary in order to produce such an action; it is a fact, that a kind of cumulative action can easily take place. In the human subject very interesting observations have been made in this direction.

By Dr. Ludwig Hirt, it was statistically proved that abortion is very frequent among females employed in lead, phosphor, arsenic and aniline factories. In a lead factory there were, out of 141 pregnant females, 82–85% which aborted. Hirt has experimented with aniline on pregnant rabbits and dogs, and found that aniline produces abortion in an exorbitant manner. The longest period which took place between the administering of

aniline and abortion was fourteen hours. It was discovered that certain poisons can gradually penetrate into the body of the young. Lead was found in the embryo of mothers, who were working in rooms in which the air was impregnated with lead. It cannot be doubted that the child suffers where the mother lives in a poisonous atmosphere. Statistics collected by Dr. Constantin Paul, show that seven hundred and eighty-five (785) children were born dead, respectively aborted, out of one thousand (1,000) born by women employed in lead factories. Is it not very likely that similar circumstances may take place among our domestic animals? And it is very probable that through the continual partaking of small quantities of poisons, such as septic substances, which are often scattered extensively in stables, a similar pernicious state should gradually form itself in the embryo without injury to the health of the mother?

I do not wish to state any other cases, which are apt to be followed by abortion, such as mechanical injuries, physical influences, or the placenta becoming diseased, diseases of the ovary, &c., but will pass directly to the consideration of infectious abortion.

Cases of abortion have for a long time been observed, where none of the above mentioned causes were known to produce them. Cases have been noticed in model stables, where animals aborted by soured food, one after the other, whilst in neighboring stables no abortions were observed, by the same food, and the same dietetic regimen. We may often observe abortion to extend in a certain succession from one cow to another. Whilst changing of food has little or no action, in these cases, abortion may, nevertheless, be suddenly checked, by removing those animals which have not yet calved, into another stable. It is natural that observations of this kind can only be made at large farms, possessing a number of cattle, where a number of animals calve at the same time, or at short intervals. On small farms, where young calves are only born at very long intervals, this singular progress is less apparent; Johne* has observed and described a case of this kind, where through a sewer, abortion spread from one cow to another.

*Sachs. Jahresbericht über das Veterinärwesen 1872. S 134.

*Thannenhauer has also drawn attention towards it, that whenever a cow cast before time, the neighboring cows were the first to follow, and supposed it be caused by infection. A number of cases where abortion was suddenly checked, by removal of the animals into different stables, speaking decidedly for themselves, that there must have been something contagious existing in the stable, which could produce abortion; consequently one feels justified in assuming the presence of some infectious matter. Finally the question come before us: 1. What is this suspected infectious matter, and from whence does it generate? and, 2. In what manner does it penetrate into the pregnant animal, and thus produce abortion?

While the question, whether there is actually such an infectious matter existing, must be answered in the affirmative, yet we soon become aware of our own ignorance, by attempting to answer both these questions: "What is the infectious matter producing abortions, and where does it originate from?

I will here state a very important experiment of Braners † and thus try to answer the above questions.

Braner, after finding bacteria in the vaginal mucus, and in some cases in the after-birth—of an aborted fœtus, attempted to produce abortion experimentally. He brought small quantities of vaginal mucus into the vagina of a cow which had calved a day previously. About nine days later abortion followed. Several other observations gave a similar result, with the exception, that abortion did not take place until eleven or fifteen days.

Out of these experiments two phenomena present themselves.

1. That some infectious matter actually is contained ‡ in the vaginal discharge of cows, which have aborted, and

2. That, the direct introduction of this matter into the vagina of a healthy cow, can produce abortion.

This fact is a matter of great importance. But it has by all means not yet been decided, what the infectious matter itself is, whether an organic ferment,as Hiller assumes, or whether a vege-

* Sachs. Jahresbericht über das Veterinärwesen 1870. S 139.

†Vgl. Sachs. Jahresbericht 1873. S. 86.

‡Braner found bacteria in it. But I leave it undecided, whether the bacteria represent the infectious matter, or if the bacteria only accompany it.

table organism. That an apparently infectious element may be developed by a cow which has aborted is a sufficiently important fact to demand further attention. If one examines other cases of abortion closer, the suspicion at once forces itself upon us, that abortion generally is produced through putrified or septic matters. Several cases are known to me where cows aborted, that were standing by the side of a cow whose secundine had become decomposed.

The case of Johne's endorses the above, for in his case also, abortion extended from a cow which had remained sick for some time after the abortion. In two other cases, two cows, which were examined for pregnancy per vaginum aborted, after each had been released from a decomposing secundine on the forenoon of the same day. Certainly in the latter case, the objection could easily be made, that this examination caused the abortion. This may be the case, but still I must explicitly mention, that I have examined cows in great numbers for pregnancy per vaginum and never found abortion to set in, with the exception of the two above stated cases. The following cases also seem to endorse the above views, by which a large number of cases of abortion appear in flocks of sheep, caused by retention of the after-birth or by being accompanied by septic inflammation. While these views are in a high degree speculative, yet it must however be confessed, that they have a strong character of probability. We must yet make closer observations and special experiments in order to clear this matter up.

We now come to the question, How did the infectious matter gain entrance to the pregnant animal? There can only be two direct ways:

(a.) The direct entrance through the vagina, and

(b.) The entrance through the air passages.

The reception through the alimentary canal is very improbable. On the one hand the processes of digestion would most probably destroy the infectious matter, on the other hand the epithe lium of the intestinal canal is less favorable to reception of the infectious matter.

Bauer's case has shown that abortion can be produced through the vagina.

This seems the most probable; as the vagina offers the most favorable conditions for the reception and formation of bacteria. But still it is difficult to comprehend, how the infectious matter gains access to the young, as

1. Ordinary infectious matter cannot enter through the uninjured vagina, and it is a fact, that we never find the mother animal complicated by infectious abortion.

2. We know, that the amnion of the young constitutes a filter, which can retain the most minute body at least for a length of time. We also know, that by pregnant, and animals attacked by anthrax, we never find anthrax-bacteria in the blood of the fœtus, whilst large quantities of them are met with in the blood of the mother. Yet it seems, as if by longer action than is the case by anthrax, the infectious matter can manage to penetrate from the vagina to the uterus, and through the amnion into the amniotic fluid, and even into the blood of the young. The following supports this opinion, viz: that the lambs of sheep affected with variola cannot become infected through the ovine for a long time after their birth, and consequently must have been "vaccinated" in the womb. The following case of Dr. Hausman's is of special interest:

He states that in an aborted four month old fœtus, he found a large number of movable and immovable bacteria in the amniotic fluid, as well as in the serous effusion in the thorax. The amnion was closed completely. It is therefore most probable that they were already contained in the uterus and penetrated into the fœtus through the amnion. Since the mother remained healthy, one cannot conceive that the bacteria penetrated from the blood of the mother into the fœtus. It is more likely that they reached the fœtus through the vagina.

On this account it would be of great interest to examine the blood and amniotic fluid of the aborted young—as fresh as possible—for bacteria, and experiment with them, to prove their infectiousness.

These facts tend to show that infectious abortion is due to the

action of a contagion, the real nature of which, at present, escapes our attention.

EDITORIAL.

GLANDERS.

In our last number we presented our readers a copy of an act passed by the Legislature of the State of New York relating to diseased animals, specially to those affected with glanders and farcy. We reprint to-day a similar act passed by the Legislature of the State of Massachusetts.

That special legislation had become necessary to check the spread of these diseases is well manifest to all those who are engaged in veterinary practice, and cannot but be approved by all owners of horses. By experience we all know that glanders is always prevailing more or less in our large cities, and that in our large horse establishments many animals are yearly destroyed on account of their being thus diseased. From recent statistics which we have made in an official capacity, we can furnish our readers some interesting statements, relating to the existence of glanders in some of our stables in New York city. In one, at one visit we condemned 8 horses; in another, 18; in a third not less than 25, and at subsequent inspections a total of 20 more. In one establishment we were told by the president that the loss last year, had been from glanders and farcy alone, 200 horses. Representing these at the low rate of $125 apiece, it is for that company alone, a loss of 25,000 dollars.

The question naturally presents itself. What is the cause of such epizootics? We may without difficulty understand it when it is known that almost none of those companies employ Veterinarians to look after their stocks, and that those who fill the place of Veterinary Surgeons are generally entirely ignorant of the nature, and above all of the symptom of the disease and of its many insiduous and varied forms.

That one who has seen a well marked case of glanders, with

its characteristic gland, its sticky typical discharge, its peculiar ulcerations, or a case of farcy with its well developed cutaneous manifestations of swellings, corns or farcy buds; that he may in many instances have no trouble to recognize such condition and condemn the animal which present them, is no proof that he is competent; as the veterinarian of education knows that dangerous as this form is, contagious as it will prove, it is not, when presenting all those well-marked symptoms, that the affection is most dangerous and the animal most to be feared. No. It is in the form of latent glanders, in the form of laryngeal glanders (as the French call it), for then the symptoms are scarcely apparent. they are easily overlooked and still the disease is just as contagious, In this form, where perhaps but little symptoms exist, and where in many cases, no apparent lesions can be detected, except by careful observations, the animal can have all the appearance of perfect health and still be a permanent center of infection. There is no doubt in our mind that cases of latent, internal glanders were the immediate cause of these great outbreaks, as they have already proved to be, in large establishments in Europe, specially some years ago in Paris. Glanders is an incurable disease, and with it the only way to guard against its wide spreading in those establishments, is by prevention—prevention which cannot be obtained except by general inspections of the entire stock—inspections which ought to be made often and at regular intervals.

We hope that the lessons so dearly learned by these companies will be a stimulus to show them the necessity of employing *competent men* to look after their horses and to guard them against a renewal of such pecuniary loss; a small fraction of it would handsomely remunerate the services of a good Veterinarian.

JURISPRUDENCE.

VETERINARY JURISPRUDENCE.

Read before the Montreal Veterinary Medical Association, by D. McEathran, R.C.V.S., President.

CONTINUED FROM PAGE 81.

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SOUNDNESS.

By the French law the seller is bound to warrant the buyer against the following diseases: specific opthalmia, amaurosis, epilepsy, glanders and farcy, chronic diseases of the chest (*Les Maladies Anciennes de poitrine ou Vieilles Courbatures*), broken wind, chronic cough, crib-biting (with or without wearing of the teeth), inguinal hernia, chronic lameness, intermittent lameness, biting and kicking, horses that are difficult to be shod or harnessed, or employed in any service. If it can be proved that the animal had any of these diseases at the time of the sale, and the buyer uses due diligence in notifying the seller of his intention to take an action *redhibitoire*, even if no warranty of soundness was given, or asked for, the jury must find for the buyer.

The detection of the various diseases and alterations in structure or functions, which are included in the long list of unsoundness recognized by the English and our own Canadian laws, require not only accurate anatomical and pathological knowledge, but a quick eye, and a clear head, for we may rest assured that dishonest dealers will leave no means untried to deceive us, to mislead our judgment, and direct our opinions with a leaning in their favor. To such perfection have these men brought the art of deception, and so replete is their language with expressions which mislead the unwary, that the examiner, while he must keep his eyes open, must keep his ears closed. For instance, a sand-crack may be filled by gutta percha, or pitch, or a broken-winded horse narcotised, a bone-spavin is said to be 'merely a slight jack,' nasal gleet, 'merely a slight cold,' a cripple, 'just a little groggy,'—to all of which the examiner must turn a deaf ear. Above all things he must assume and maintain an independent, upright position.

His opinion must be unfettered and uncompromised—being neither influenced by friendship, flattery, or money, nor swayed by fear of offence nor threats of withdrawal of custom by either party. On a horse being submitted for examination, he should be allowed to stand at least half an hour; if longer, all the better. He must be observed in the stable. Ten minutes watching of his actions in the stall will often give the key to the weak points. Observe if he is a free feeder, if he coughs while feeding. Navicular disease, corns, and most lameness, will be indicated by pointing, resting or shifting the feet. The lameness of spavin will be indicated by stiffness in moving from one side to the other in the stall, as will also be string halt. His breathing should also be noticed when quiet in the stable. On being backed out of the stall, it will be seen whether he is a shiverer or not, and when being led out any stiffness of action will be noticed. The examiner must now stand a few yards from him in front and critically examine by the eye, the head. chest and fore legs; then, moving to the side, observe his general outline, mode of standing, capulet or enlarged elbow, enlarged knee, fetlock, ring-bone in the forelegs, bog-spavin, curb-capped hock, and ring-bone behind. Taking a position a few yards behind him, he compares the symmetry of the quarters; observe if they are both alike; thorough-pin, wind-galls and interfering should be looked for. The opposite side being viewed in the same way, he should now be led straight out at a walk, the examiner noticing his actions carefully as he walks from him, and especially as he comes back in a straight line to him. He should be trotted in the same way, and any peculiarity of action or lameness noted. He is now to be subjected to a most careful manual inspection, which will be materally assisted by the preliminary observations. The inspector will generally commence by noting the mouth, in which the teeth will indicate the age. The incisors should be carefully examined to discover false marks by which old horses are made to appear young, a process known as 'bishoping'; but, from the length, shape and direction of the teeth, the artificial mark being irregular and generally deeper, and not surrounded by a ring of enamel, an experienced observer will easily distinguish between the genuine and substituted marks. The incisors will also indicate

a crib-biter, by having the edges worn away. The molar teeth should also be examined to make certain of their being sound and regular. A diseased tooth, or a long irregular one, will often render an animal almost useless, and may result in permanent unsoundness. This part of the examination is too often conducted in a careless manner. The tongue should also be examined. It is sometimes lacerated, or amputated, either of which may cause, not only inconvenience, but may reduce the animal's usefulness and value very materially, and should never be overlooked. The nostrils should be next examined, their size, shape, and degree of dilatation, will indicate the lung capacity, or disease of the respiratory organs. Thus a broken-winded horse will have the nostrils permanently dilated. A small nostril indicates a corresponding deficiency of lung development. The color and condition of the lining membrane should be critically considered. Glanders, nasal gleet, tumors, catarrh, may all be indicated by this membrane, and confirmed by other symptoms. The eye will now be carefully examined, protected from reflections of white objects by shading with a black hat. It is to be viewed from before, behind, and at the sides, observing whether the cornea is clear and transparent. Opacity of the cornea, however slight, is unsound. The aqueous humour should be clear. Mudness or floating specks in it indicate disease. The pupil should be oval, and its borders regular, and should close in a bright light and dilate in a dim one. The lens should be clear and transparent. Any speck or opacity may indicate specific opthalmia or even cataract. The examination of the eyes should be conducted in a bright sunlight and afterwards in a dark loose box or stable. The ears should next be examined. Tumors sometimes fill up the external ear, or sores may give rise to difficulty in bridling or a tendency to shaking of the head, by which the bridle or halter is displaced. They should be examined also to ascertain the perfection of hearing. Few horses are deaf, yet a deaf horse is an unsound and often a dangerous one. His manner of carrying his ears will generally be an indication of his temperament and intelligence. The lopped ear indicates sluggishness and stupidity, an erect, actively moving ear indicates activity and intelligence. The parotid and submasulliary glands should be

successively scrutinized. Enlargement of either should lead to careful examination of both the upper and lower air passages. The upper part of the head should be free from all swelling, either inflammatory or indurated, the former indicating the existence or commencement of pole-evil, the latter its having existed and its liability to it, thus rendering the animal less useful as well as less valuable, therefore unsound. The neck, especially under the mane, should be free from skin diseases and sores from the pressure of the upper part of the collar. Draught horses are frequently rendered less useful from these causes. The seat of the collar on the side of the neck and shoulder should be free from collar galls or sitfasts. The withers should be examined for fistula. The back for saddle galls, sitfasts or stiffness (anchylosis). The pelvis is now to be carefully observed, by comparing both quarters. A flattened or depressed quarter indicates a previous fracture of the bones which, although in many cases, especially in geldings, does not interfere with his usefulness, lessens his value, and must not be overlooked. In mares it is often more serious, by lessening the size of the pelvis and its relaxation during parturition. The extent of the injury and its effects can only be understood by correct anatomical knowledge of the parts, but even a slight defect in the pelvic bones must be considered unsound. The tail should be examined. If it hangs powerless, it may have been fractured, and although he may be as useful as ever, his market value is lessened, and he is therefore unsound. Melanotic tumors, and diseased bone on the end of the tail (*exfoliation after amputation) constitute unsoundness. Melanotic tumors involving the anus, no matter how small they may be, constitute unsoundness. The abdomen will now be examined for rupture, the uninary and genital organs will also be inspected, for tumors or erruptions on the penis, dropsy of the scrotum (hydrocele), hernia of the scrotum in the male, cancer, leucorrhoea and ruptured perineum in the female. The examiner will now examine both jugular veins. An obliterated jugular is unsound; a small jugular will indicate a ten-

* It is true that this may be got rid of by reamputation, yet tetanus may be induced and result in death; consequently we must consider the animal unsound.

dency to 'staggers.' The fore extremity will be examined for atrophy of the muscles covering the blade bone, thickening and injuries of the flexor brachii, deep seated abscesses; the chest for atrophy of the muscles, indicating chronic rheumatism or navicular disease; the elbow for capulet, a tumor caused by bruising of the part by pressure, owing to the animal lying on the caulker or heel of the shoe, which often causes loss of time and is a serious blemish, depreciating the value of the animal and therefore renders ing him unsound. Enlarged bursæ above the knee, either in front or behind, may not interfere with an animal's usefulness, but reduce his value. Bony tumors of the knee, distended capsules, thickened ligaments or tendons or whatever interferes with or looses the mobility of the joint, renders him unsound. Scars on the knee indicate a tendency to stumble, and should be always pointed out to the buyer. They may merely be blemishes which in no way interfere with his usefulness, but few gentlemen will buy a broken kneed horse for hack or family purposes. A splint, if situated at the head of the bone near the joint, or if large and liable to cause interfering, and while in a growing condition, attended by pain and lameness, is unsound, but, if small, situated low down, and not causing lameness, it does not constitute unsoundness. Osteophyte formations, and bony tumors at the lower end of the cannon bone, are unsound. Osseous formation involving the sessamoids or their groove, or any enlargement of the posterior part of the fetlock, render an animal unsound.

EXTRACTS FROM FOREIGN PAPERS.

By A. LIAUTARD, M.D., V.S.

VENTRAL HERNIA IN THE HORSE.

Mr. Chuchu of Alfort, reports a case of that nature which waf healed by the application of a pad kept in place by surcingle and straps passing in different directions round the body of the animal and secured on his back; much difficulty however being encountered in rendering the pad immovable from the situation of the

hernia little below the cord of the left flank. The animal did well for seven days, but showing some unpleasant symptoms, the bandage was removed and gangrenous complications towards the seat of the application of the pad were discovered. The hernia had entirely disappeared. Though these complications were treated at once, the symptoms increased in character, and the animal died 48 hours afterwards. At the post mortem, an adhesive inflammation uniting the edges of the wound of the different layers of the abdominal walls was discovered, the cicatrix showing already a sufficient strength to resist the pressure of the fingers.

The conclusions of the author are. 1. That a large ventral hernia may be radically cured. 2. That it is not necessary that the reductions and the application of the bandage should take place immediately, (in that case it was not put on until three days after the accident.) 3. That the work of repair goes on rapidly, and that therefore it is not necessary to have an apparatus in position for a long time.—(Rec. Medic. Veter.)

AMPUTATION OF THE UTERUS IN A COW.

A cow afflicted with a complete prolapsus uteri presented the following symptoms: an enormous, blackish ovoid mass, exhaling a very offensive odor, protruded through the vulva and hung down to the hocks: it was the uterus. Its size was about three times as large as normal, the mucous membrane dark and thickened, here and there, covered with dirt and manure.

Being washed carefully, it showed gangrenous condition of its walls quite extensively; the tissues soften and infiltrated with fœtid serosity and easily torn. The reduction being impossible, amputation was decided upon. An *elastic* cord, of the size of a fishing line, was used and applied at the base of the tumor with several twists round the whole mass. 48 hours afterwards, the hanging mass was excised some three inches from the ligature and the uterine stump was drawn in the pelvis. A purulent discharge kept up for several weeks afterwards, and then stopped. The cow kept on milking for fourteen months afterwards.—(Journal de Zootechnie).

EPIZOOTIE AMONGST CATS PRODUCED BY THE TŒRNIA CRASSICOLLIS.

During the summer of 1876, Dr. Leoncini was informed that many cats in his town had died without apparent cause, after presenting the following symptoms: gradual diminution and loss of appetite, diarrhœa followed by constipation, abundant salivation, contraction of the elevator muscles of the upper lips, great prostration, lack of vision; in some, appearance of deafness; in a few vomiting, some nervous phenomena, epilectiform convulsions and often colicy pains.

In the post-mortems the principal lesions were found in the stomach, whose walls were much retracted and the seat of a catarrhal inflammation. It contains a long worm white and flat; the intestines were empty and the seat of a chronic inflammation; all the other organs were healthy.

The parasite was flat, white, formed of rings about 12 centimeters long and 5 or 6 millimeters wide; it was a true tœrnia as the microscopic examination of the head showed it.

On inquiries as to the cause it was found that many cats had been imported to destroy the rats of the place, and that the best hunters were those who died the first.—(Giornale di medicina veterinaria practica).

TREATMENT OF THE CARTILAGINOUS QUITTOR BY CONCENTRATED CARBOLIC ACID.

Mr. Hartenstein strongly recommends this mode of treatment. In eight severe cases of several weeks' standing the treatment was stopped from the third to the eighth day, he considering the disease as cured the moment the purulent discharge has become of good nature and reduced in quantity. His modus operandi is as follows: the parts being thoroughly cleaned and dried afterwards, liquid carbolic acid is injected carefully in the fistulæ slowly so as impregnate all the tissues, the injection being renewed once a day for three, four, six or eight days, according to the condition and extent of the disease—no other dressing.

The advantage of this treatment is to do away principally with

the surgical operation of the removal of the cartilage, which is not without danger, which lays up an animal for quite a long time and to which many owners of horses will object.—(Archives Veterinaires.)

INDIGESTIONS FROM WATER—TREATED BY ALCOHOL.

Mr. Leclerc recommends the administration of alcohol in preference to that of acetate of ammonia, which has but little action; to that of spirits of turpentine, which is too irritating; of camphor and assafœtida, which are of difficult administration or preparation. He considers that the proper agent must be a powerful stimulant of the muscular contractions and of the secretions of the intestines, one which, though in a small quantity, is of easy preparation and administration, of rapid effects and action, and can be found readily everywhere. Alcohol seems to possess all these qualities. Pure, at the dose of about 7 ounces, it stimulates the digestive apparatus, the salivary secretion is increased, the buccal membrane is highly covered, a general surexcitation is produced, the eyes become dull, the motions are less active, the struggles less powerful, abundant and rattling borborygms are soon heard, gases are expressed in quantity, soon followed by fœcal matters.

Mr. L. gives from ten to fifteen ounces in three doses at ten minutes apart; about two ounces first, then three or four, and then seven ounces if there is no relief.—(Archives Veterinaires.)

ON SEPTICEMIÆ.

By Mr. Pasteur.

CONCLUSIONS.

1. There exist several sorts of septicemiæ or putrid infection.
2. There are several septic vibrios whose physiological properties differ by several essential points.
3. The septic vibrio needs no air to live—not only he lives without it, but long contact with it kills it and destroys it with its virulency.
4. When it develops itself in a liquid in contact with the air,

it is on account of thickness in the liquid and that the vibrio of the deep layers is protected by the organisms of the superficial layers.

5. The septic vibrio lives and multiplies in the perfect vacuum, as in the purest carbonic acid gas. In these conditions, it is entirely modified. It loses its filiform aspect, resorbs itself, and leaves in its place corpuscles, which soon germinate.

6. The germs of the septic vibrio may form a dust that can be carried of by the wind, and that water may hold in suspensions.

7. Even in compressed oxygen, (several atmospheric pressures), these germs will conserve their vitality and their power of reproduction.

8. These germs are fecunds in the perfect vacuum, and pure carbonic acid gas, if they meet with a nutritive matter, proper to their development.

9. Among the microscopical ferments of diseases, and amongst the organisms, whose presence excite or complicate morbid manifestations, are, 1. Beings which are exclusively ærobics; 2. Beings which are both ærobics and anerobics; 3. Beings which are exclusively anerobics.

10. The denominations and classification of vibrios proposed in later years cannot be established, as first thought, from morphological considerations. The septic vibrio, for instance, passes, according to the parts where it is cultivated, through forms, length, and sizes so different that one would think them to be specific individuals—separated and distinct forms from each others.—(Academie de Medecine de Paris).

MANNER OF COLLECTING THE VIRUS OF PLEURO-PNEUMONIA, AND MODE OF INOCULATION.

The inoculation of pleuro-pneumonia, says Mr. Robouane, is an excellent measure, providing the virus is well obtained, and its effects can be watched, especially in summer. He proceeds as follows;

An animal being destroyed during the period of acme, the

serosity is collected from the parts of the lungs recently infiltrated, or in the way of heptization. To that effect, they are incised in different directions and squeezed; the liquid thus obtained which has coagulated is squeezed again through a fine cloth, and is ready for use, or can be kept in a cool place.

The virus obtained from the dark parts of the lungs gives rise oftener to accidents of gangrene than the liquid gathered as above.

To operate, Mr. Robouane cut the hairs at the end of the tail, and with a bistouri makes three incisions, one in the middle, and one on each side, and a little below.

The dermis alone is interested, an assistant compresses the tail, and keeps it dry from blood. The virus is placed in the wounds with a lancet, the tail being kept raised for a few moments to allow absorption. Complications are prevented by caustics or incisions, scarifications or the actual cautery.—(Archives Veterinaires).

CENTRAL SOCIETY OF VETERINARY MEDICINE OF PARIS.

The appreciation of the work done by the Central Society of Veterinary Medicine in Paris is fully recognized by a decree from the President of the French Republic in date of the 16th of April, which reads;

Art. 1. The Central Society of Veterinary Medicine, established in Paris, is recognized as an establishment of public utility.

The Status are approved such as they are annexed to the present .

Art. 2. The Secretary of Agriculture and Commerce is charged with the execution of the present.—(Archives Veterinaires).

CORRESPONDENCE.

INFECTIOUS PLEURO-PNEUMONIA.

By Charles B. Michener, D.V.S.

:o:

The outbreak of pleuro-pneumonia near Clinton, N. J., was thought to have subsided, and no cases occurred from about the

first of January to the first of March, when ten cows belonging to Wm. Young, whose lands adjoin those of G. Michael Freck, (an infected farm) broke out with the disease, five of which died. In this outbreak inoculation was resorted to, after which only four cases developed the disease, and these on the second day after the inoculation. Since then there have been no new cases. Just here let me state in answer to inquiries which I have received, that the cow which communicated the disease in question to Mr. Cramer's herd is *said* to have come from Ohio, but that she did, or that she was not in New York City long enough to contract the disease there, seems to be past finding out.

That this cow did introduce pleuro-pneumonia in that neighborhood there is no question, but that she became infected in Ohio is extremely doubtful.

In my article on this same subject which appeared in the January number of the REVIEW, it was stated that some of the infected cattle "recovered."

I did not intend to convey the idea that the disease is curable, but that cattle may sufficiently recover to return to their milk and lay on fat.

I took it for granted that the profession was entirely satisfied as to its incurability, and hence the loose manner in which the word *recover* was used. In an essay which I read before the Pennsylvania State Board of Agriculture in May, 1877, on this subject, in speaking of the terminations—occurs the following: "Health seems to be reëstablished. I say *seems* to be restored; for in almost every case of this kind we find, on a careful examination, more or less diseased condition of the lungs, which is present in a latent form, but only waits the proper stimulus to make it the nucleus of a contagion which may infect whole neighborhoods and bring about all the terrible calamities resultant on such outbreaks," and further on, "Cattle once infected should not be kept for any purpose, but if kept should remain apart from all others until fat enough to kill, and be disposed of in this manner."

To veterinarians the most important point of all is, how shall we deal with an outbreak of pleuro-pneumonia?

I am opposed to the system of "stamping out," if by that is meant, and I so understand it, that all cattle which have come in contact with the diseased, whether themselves sick or not, are to be destroyed. This plan destroys too many healthy cattle at a loss both to the State and individual owner, or, like capital punishment, from its terrible severity we are apt to be persuaded that possibly some may not develop the disease that have been exposed, and that we are left without the protection which the *more mild* yet *surer* system of *inoculation* affords. I would not advise any one to keep and treat cattle once infected, but would suggest that at any outbreak of infectious pleuro-pneumonia it be obligatory upon the owners to employ a competent veterinary surgeon, who shall carefully examine all cattle that have been exposed to the contagion, and such as are sick, or become so, to be killed *at once*, and their carcasses buried. All the apparently healthy cattle to be properly *inoculated* and *strictly isolated* from all others.

That all cattle within a radius of half a mile be inoculated.

Every State should have its own veterinary surgeon, paid out of the State Treasury, who should be consulted upon the appearance of any and all enzootic or epizootic diseases.

Destroying the sick, and early isolation of the exposed with inoculation will, I think, be successful in eradicating any outbreak of this disease which may occur.

Carversville, Bucks Co., Pa., April 18, 1878.

QUACKERY IN THE PROFESSION.

To the Editor of American Veterinary Review:

The May number of the Review contains the draft of a Bill before the Legislature of your State regulating the practice of Veterinary Medicine and Surgery, and while it would be of great value to your commonwealth in its tendency to restrict the practice of this import and specialty, to men with at least a reasonable amount of practical knowledge of the science, and also by preventing young men from practicing until they have qualified themselves by a regular course of study, it has no influence whatever

upon the very worst form of quackery which besets our profession, "*quackery in the ranks of the qualified.*"

Veterinary medicine in America is, to-day, advancing with rapid strides toward that higher plane of usefulness occupied by kindred sciences, and were it not hampered by the influences of the evil practices of the past, and by the greedy avarice of the present, its progress would be even more rapid than it is.

The simple fact that many unqualified men are practicing our profession is not an insurmountable, nor, in fact, a very serious obstacle to our advancement; neither are we in want of an appreciative public. But when we look to our own ranks, and behold the flagrant violations of principle, preached every day by some of our members, outside quackery sinks into insignificance in quality, if not in quantity, by the comparison, and we no longer wonder that our sister professions are so slow to extend the hand of fellowship and wish us success.

They are ever ready and waiting to give to us all our just dues, the moment we have satisfied them that self-aggrandizement and mercenariness has been subverted to the interests of true science.

Honest worth, when rightly directed, usually receives from the American people its full reward, and as surely and justly do the bickerings, instigated by the success of a rival, meet with the contempt of all. There is too much of this petty jealousy—that detestable remnant of quackery—existing in our ranks to-day, and no matter how high they may stand in public opinion, or in their profession, at the present time, all who stoop to participate in these disgraceful factious controversies, need live but a short time to find their names in the oblivion of their own production, for there are young workers coming into the field, who will win the race in which the older members have so heavily handicapped themselves with the weight of these nauseous dissensions.

Another evil which is not, as yet, so fully appreciated by the public, yet is more widespread and equally as injurious to the true science, is the deprecable practice of editing a "Veterinary column" in a "sporting" or "agricultural" paper. This is nothing more nor less than what might be called *aristocratic quackery*

and it is none the less objectionable because indulged in by some very respectable and honored gentlemen who lend a semblance of regularity to the business by being possessors of diplomas.

The editor's assumption that he can intelligently practice veterinary medicine through the columns of a paper, smacks strongly of unlimited self-conceit, and lowers him, at least in this respect, to the level of all those pretenders who attempt to gull an over-confiding public.

That any veterinary surgeon assumes such a position in the honest belief that he is benefitting either the profession or the public, is not consistent with our opinion of the dictates of a highly cultured professional intellect. The objects sought to be attained are evidently the pecuniary remuneration attached to the position, the very questionable notoriety, or the privilege of free advertising; any or all of which are unworthy perquisites to a truly scientific mind.

A possible excuse might be offered where the remuneration was the only means of support, but a reference to the veterinary editors of American papers exhibits an entire absence of any such necessity; and even had we found it otherwise, we are not prepared to believe that necessity should sanction the perpetration of so great a wrong.

Lastly, besides the unjust stigma cast upon veterinary science, is the injustice suffered by the patient, by the client, and by all other members of the profession; for the free bids made for practice by the editors, supplemented by an occasional flattering editorial from the editor-in-chief, places all other practitioners in a false light, and deprives them of a part of their just patronage.

This is felt more particularly by young men just entering upon practice, and we trust that every alumnus of all the veterinary colleges in America will add their censure to an evil practice which should have died with the advent of the first "veterinary editor."

L. L.

SANITARY LEGISLATION.

NOTICE.

The undersigned, Commissioners on Contagious Diseases

among Cattle, hereby call the attention of all persons within the Commonwealth to the following Act of the Legislature, approved February 28, 1878:

"CHAPTER 24.

AN ACT TO PREVENT THE SPREADING OF CONTAGIOUS AND INFECTIOUS DISEASES AMONG DOMESTIC ANIMALS.

Be it enacted, etc., as follows:

"SECTION 1. The Selectmen of Towns, Mayors and Aldermen of Cities, and the Cattle Commissioners of this Commonwealth, shall have, and may exercise the powers, and shall be subject to the duties, for the prevention of the diseases known as farcy and glanders among horses, asses and mules, and for the prevention of contagious and infectious diseases among domestic animals, that are now conferred or imposed upon them by the laws relating to the prevention of contagious diseases among cattle.

"SECT. 2. The penalties imposed by chapter two hundred and nineteen of the Acts of the year one thousand eight hundred and sixty, entitled "An Act concerning contagious diseases among cattle," are hereby made applicable to any violation of law relating to the diseases in horses, asses and mules, known as farcy and glanders, or relating to contagious diseases in domestic animals."

The penalties referred to and applicable in this case are contained in Section 9 of Chapter 220 of the Acts of 1860, as follows, viz.:

"SECT. 9. Whoever knows or has reason to suspect the existence of any such disease among cattle in his possession, or under his care, shall forthwith give notice to the Selectmen of the town, or Mayor and Aldermen of the city where such cattle may be kept, and for failure to do so, shall be punished by fine not exceeding five hundred dollars, or by imprisonment not exceeding one year."

Also Sections 5 and 6 of Chapter 221 of the Acts of 1860, as follows, viz.:

"SECT. 5. The Selectmen of the several Towns, and the Mayors and Aldermen of the several Cities, shall within twenty-four hours after they shall have notice that any cattle in their respect-

ive towns and cities are infected with, or have been exposed to any such disease, give notice in writing to the Commissioners of the same.

"SECT. 6. The Commissioners are authorized to make all necessary regulations for the treatment, cure and extirpation of said disease, and to enforce and to carry into effect all such regulations as may from time to time be made for that end; and any such officer refusing or neglecting to enforce and carry out any regulation of the Commissioners shall be punished by fine not exceeding five hundred dollars for every such offence."

In discharge of the duty imposed by the several Acts above cited, the Commissioners hereby forbid the passage of any horses, asses or mules infected with the diseases known as farcy and glanders, over or along any highway or public thoroughfare, and direct the Selectmen of the several towns, and the Mayors and Aldermen of the several cities of the Commonwealth, to exercise all diligence, to extirpate said diseases by causing the infected animals to be isolated and the Commissioners notified thereof by letter directed to No. 153 Lincoln Street, Boston.

LEVI STOCKBRIDGE,
E. F. THAYER,
H. W. JORDAN,
Commissioners on Contagious Diseases among Cattle.

Boston, April 29, 1878.

NATIONAL VETERINARY CONGRESS IN PARIS.

The exhibition in Paris will be taken as an occasion for the veterinarians of France to have a congress where questions of interest to veterinary surgeons, to the advancement of veterinary science, &c., will be treated during the week included between September the 8th and September the 15th.

The following are the questions to be discussed:

1. Study the means proper to ameliorate the position of civil veterinarians in France.

2. Examine the best mode of organization of the sanitary service and the means to insure its execution.

3. Examine the position that veterinarians ought to hold in the inspection of fairs and markets, of slaughter-houses, as well as in different juries of exhibition as judges.

4. Examine the conditions of admissions in the Veterinary Schools and the modifications to be recommended in their curriculum.

5. Study the question of Veterinary Associations in France.

6. Examine the legislation of soundness (vices rehibitoires) and of contagious diseases, &c.

During the congress at some recess the inauguration of the statue of Claude Bourgelat will take place.

Though this Veterinary Congress will be only national, and only French veterinarians will be asked to be present and take part in the discussions, there is no doubt that many members of the profession, foreigners in nationality, but compatriots in their feelings, will be present at this great gathering of veterinary surgeons, and that the profession will be much benefitted by the work of that scientific meeting, where all those questions, though but national in their interest, will be treated.

EXCHANGES AND JOURNALS RECEIVED.

Revue fur Thierheilkunde und Thierzucht; Rural New Yorker; Ohio Practical Farmer; Scientific American; Hospital Gazette; Medical Record; Turf, Field and Farm; Weekly Gazette of Montreal; Country Gentleman; Journal d'Agriculture; Mouvement Medical; National Live Stock Journal; American Agriculturist; Veterinary Journal; Recueil de Medecine Veterinaire; Zeitschrift des Thiermedicin, &c., &c.

AMERICAN VETERINARY REVIEW,

JULY, 1878.

ORIGINAL ARTICLES.

A CONTRIBUTION

TO THE PATHOLOGY AND ÆTIOLOGY OF HUMAN AND ANIMAL VARIOLÆ.

TRANSLATED BY F. S. BILLINGS.

(*Continued from page* 102.)

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HOW DO OTHER ANIMALS AND MAN DEPORT THEMSELVES TOWARD THE CONTAGIUM OF V. OVINA ?

In general, the contagium of v. ovina deports itself in this direction similar to that of v. humana. It has the faculty to complicate other animal species, in but an insignificant degree. As already mentioned, a local infection of men with ovina from accidental injury when inoculating sheep, has been reported in isolated cases; a sort of positive inoculation. Goats have been in very isolated cases infected by the contagium of v. ovina in a volatile (or dispersing) form, that is, when in the same stable with diseased sheep; it generates by them a general exanthema accompanied by high fever, which deported itself in a manner

exactly corresponding to v. ovina verra. Goats react against inoculation with ovine similar to the sheep ; which corresponds to their near zoological relationship. In seldom cases a variolic eruption has been observed by swine, for instance, when they have been introduced in an uncleaned and non-disinfected sheep-pen, in which variola-diseased sheep have been confined. Aside from the numerous resultless inoculations with ovine, by horses, dogs, rabbits, hares, and fowls, I will mention that inoculations of cattle generated a local pustule—Sacco—and that positive results have also been received by rabbits—Gerlach—; re-inoculation of sheep gave positive results.

With regard to the deportment of sheep towards the contagium of v. humana and that of other forms, the action of vacci nation is especially worthy of our attention. Vaccination of sheep gives as a rule a positive result, pustules develop as by ovination; however we frequently find pustules have developed on places where the animals were not inoculated, or in other words an exanthema develops similar to that of v. ovina vera. Sheep have a great inclination to generalize vaccine, and therefore the action of the same is entirely different with sheep as by man, by whom a general eruption is never observed. The assumption of some authors that this ovinisated vaccine is entirely identical with v. ovina vera, appears as yet to want the necessary proof. Another metamorphosis which vaccine suffers in the ovine organismus is worthy of our attention ; it acquires the ability to disperse itself as a volatile contagium, while the original vaccine is of a fixed nature.

Variola porcina is a seldom disease, and the reports of the same which are to be found in the literature are worse than scanty. According to its course, duration and termination, in severe cases it bears the strongest resemblance to v. humana and v. ovina, in a light form to human varalois, in other, but very seldom cases, to the varicella of man. According to the descriptions which we have, the porcine variety complicates mostly young animals; the exanthema being distributed over the entire body. They are in the beginning chiefly situated along the dorsal or abdominal surface, at another time along the mammæ, and from

here extend over the body. From the petechiæ develop noduli and pustulæ with a yellowish contents, which finally dries and form eschara, which fall off. While those cases are of a harmless nature which resemble the varicella of man, in others the disease assumes a malignant form, 20—25 of the young animals which become diseased perishing. Fischer has experimentally proven the infectious nature of this lighter or varicella-like form, while by other severe invasions the infectious nature of the pest is directly proven. I must also say that it is very probable that various variola-like exanthemata of swine have been mistakenly held for variola porcina, and that we are yet in want of exact descriptions of the latter.

As variola porcina is a seldom occurrence, generally limited to isolated herds and stables, it is natural the next question should be: *from whence does it come?* If we follow the different intimations which may help us on our way, we find single cases of v. porcina by which it is reported that concomitantly a similar exanthema was observed by cattle, or that v. vaccina was prevailing in the vicinity, or that v. ovina was prevailing in the neighboring districts. The development of v. porcina from v. ovina seems to me proven by one observation, according to which young swine were attacked by variola after being brought into an uncleany and non-disinfected sheep pen, in which variolic-diseased sheep had been confined some months previously. The disease was transmitted from the diseased young pigs to other pigs which had not been in the stable in question. By the unquestionable connection of v. caprina with v. ovina, speaks also the experimentally successful transmission of v. porcina to goats and vice versa.—Gerlach—for the genetical connection between v. ovina and v. porcina.

I have already spoken of the fact that v. humana may be transmitted to swine. It must for the present remain an open question whether v. porcina is in condition to generate variolois by man or not, as in late literature nothing pro or contra is to be found. According to what has been said, I can scarcely consider v. porcina as a disease sui generis, as the continuity of the individual attack fails entirely; it appears sometimes here and sometimes there, and therefore we must consider this disease more as

an offshoot, produced by the wanderings of the contagium of v. humana or ovina, perhaps also of vaccina, to swine. When an evidently infectious disease appears so seldom as v. porcina, while its genesis has been proven in single cases from v. ovina or humana, and when we cannot concede an obiogenetic development for the same, then everything must force us to the conclusion that v. porcina must take its origin from other forms of variola, ovina, vaccina or humana.

We will now proceed to consider the other main alveolic group, viz; the localized variolæ of cattle, horses and goats, and shall follow the same with consideration of variolæ by the dog, monkey, hare, camel, and domestic fowls.

Variolæ equinæ have won an undeserved importance in that Jenner sought in them the origin of variolæ vaccinæ. By the great infrequency of this form of variola, at least in Germany, one looks in vain for exact and good descriptions of the same. [I must be excused from introducing an exact translation of the next few words, as I do not see any better form to put them into (B.).] I show you here two wax preparations from Sacco, which represent equina in different stages of development. Upon the pastern of one foot you see variolæ in the stadium of eruption, on the second in that of suppuration. You may also see two strongly prominent places which are hairless, the one as large as a 25c piece, the other as large as a silver dollar, slightly hyperæmic, and appearing somewhat like a pseudo-erysipelas upon the human finger. This erysipelatous tumefaction of the posterior face of the pastern is primarily hot and painful, and soon presents a moist surface. The infectious, sometimes pustulous exanthema generates by inoculation of its pathological product, equine, pure vaccina by cattle, and by man an exanthema resembling that produced by vaccine (Lafosse, Bouley, Depaul); by vehicles or harness—the exanthema may be extended to other horses.

The circumstance which at first appears remarkable, that variola is as a rule by the horse, represented by an erysipelatous or eczematous exanthema in the vicinity of the pastern, finds an easy explanation, when we remember, that the parts in question are frequently the subject of injuries or erosions which especially

favor the entrance of contagious elements into the system. Why pustules similar to those of the other forms of variolæ do not develop on the pasterns of the horse, probably lies in the anatomical construction of the relatively thick cutis of the parts in question. I lately inoculated a calf upon the ear with humanised vaccine, and there developed upon the same an eczema, but no pustules; while a calf inoculated shortly after (by Dr. Kranz and myself) upon the udder and valva presented well developed vaccine pustules.

The same reasons which we have brought forward in considering the descent of v. pocina from other variolic forms, also lead me to consider the idiopathic development of v. equina as very doubtful. Entirely discarding an abiogentic origin, I must consider other springs as the fountains from which this so seldom (by us) appearing disease takes its origin. Bouley's assertion that v. equina is much more frequent than the original v. vaccina is even for France scarcely justifiable, as far as we can judge from the present literature, and not at all applicable to Germany. As it has been experimentally proven, that horses are susceptible as well for animal as for humanised vaccine, also for human variola, it seems scarcely necessary to go farther in seeking for the genesis of v. equina. We have already considered Scholz's observations with regard to the transmission of v. humana by diseased attendants to foals. That v. vaccina (bovina) cannot possibly owe its genesis to v. equina, is sufficiently proven by the simple fact, that v. vaccina comes to pass in all parts of Germany, while v. equina seems to almost entirely fail of representation.

Variolæ caprinæ is also a very seldom disease, for in the course of 20 to 30 years we can scarcely find a description of half a dozen cases. It comes to pass in two different forms: as a local process—similar to v. vaccina—upon the udder, and also as a general exanthema, accompanied by fever. As a localized affection, the caprine form evidently corresponds to the bovine, and presents, like the same, an irregular development; and either proceeds from the same, or has a like origin. Although we find here and there assertions that the same form of variola have been met with coevially by goats and cows, yet goats, as a rule, remain exempt

from the disease when confined in the same stable with vaccina-diseased cows, and inoculations with the latter generally give only a negative result; therefore the disposition of goats for vaccine or better, for the ætiological agent of the same, is in all cases insignificant.

As a severe and general disease—although seldom—we meet with variolæ by goats which are confined in the same stable with variola-diseased sheep. In the place of further description, I quote a recent observation: "In a stable in which variola-diseased sheep were confined, three non-inoculated goats became suddenly diseased with variola, the exanthema of which exactly corresponds that of v. ovina. Upon the udder were to be found numerous pisiform variolæ in the form of hard flattened noduli, with little exudation of lymph; aside from these were to be seen variolæ distributed over the body, especially upon the median face of the posterior extremities, more isolated upon the abdomen, along the back and on the head. At the same time marked fever phenomena were present, the appetite failed, the lips were tumefied, a tolerably profuse muco-purulent flow was perceptible from the nasal cavities. Convalesence resulted in 14 days. Immediately on these goats becoming diseased, two others were inoculated upon the ear with ovine; by both a single inoculatory pustule developed, and both remained immune from v. ovina vera. Prietzsch.

From the above, it may be seen that v. ovina may be accidentally transmitted to goats; also that positive results follow the inoculation of the same with ovine. As we have seen, the so-called caprine variola owes its genesis either to v. ovina or to v. vaccina, or finally it may sometimes be traced to the same fountain of infection as the latter, and is homologous to the same.

With regard to the variola by other domestic animals, the data before us are so scanty that it is with difficulty that we can draw anything positive from them. Although in most Manuals of Pathology v. canina is described, yet I must say, that I have been successful in the new literature in finding but one description, that will allow us safely to deduce that by dogs a true variolous eruption takes place. Authors have attributed to such true canina variola, either an epigenetic origin, or traced the

genesis of the same to v. humana or ovina. Those exanthemata which have been generally looked upon as v. canina, may, in my opinion, be more justly considered as symptomatic cutical eruptions, which have nothing in common with true variolæ. Such variola, like exanthemata, frequently accompany the so-called distemper of dogs; they have, however, little resemblance to the variolæ of the other domestic animals; they continue six to seven days, and never form eschara or cicatrices. In other cases v. canina is said to possess more resemblance to varicella of man; we must not, therefore, leave out of consideration the possibility of the transmission of the same to children. When we, however, read that in such cases where a dog has 40 to 50 pustules resembling those of varicella upon the head, and that grown persons and children have, at the same time, suffered from a similar eruption, I cannot suppress the suspicion, (which is grounded on much experience), that in such cases the observers may have had before them a parasitic exanthema, such as herpes tonsuraus or something similar. In other cases the variola-like exanthema, which comes to pass by dogs by the transmission of apthæ epizooticæ, and is especially located between the toes, may have given occasion to complication with variola. Aside from the previously mentioned experiments of Greve, I do not know of any other positive experiments in this direction. At least the dog has no susceptibility for the contagium of v. humana, except by inoculation, as infection of dogs by variolæ epidemics, where occasions enough are given on account of their intimate relations with diseased human beings, are as yet unknown. If we inoculate dogs with vaccine, we shall develop small bullæ filled with purulent elements, which possess an umbo, but only an unimportant pit; in individual cases it is reported that positive re-inoculations have taken place by children. Hamon.

Variola by the cat has not as yet been reported.

Several old and new observations are on record with regard to variolæ by monkeys, according to which in West Indies and America, the wild monkeys were affected by variola, when the latter was prevailing among the human race. Probably monkeys deport themselves towards vaccine in a manner similar to man;

at least Hamon reports having inoculated monkeys from successfully vaccinated dogs, and as having obtained well characterized pustules with a prominent pit, the contents of which were re-inoculated upon dogs with positive results.

Agnelli reports having observed an exanthema resembling that of v. vaccina by camels, in 1850, in Algiers, the lymph of which inoculated to man, protected the same from v. humana. Masson reports that in East India a variola-like eruption has been known for a long time to prevail by camels.

Of the wild mammalia, *hares* are said to be much subjected to variola, and especially in North Germany has this assertion won a considerable importance, as people have looked upon hares as the interposers and vehicles, frequently as the originators of v. ovina. According to hunters and foresters, this so-called variola of hares frequently assumes a malignant form. Aside from the fact that numerous endeavors to transmit ovine to hares have regularly been followed by negative results,—while rabbits are occasionally susceptible,—I do not in the least doubt, that that pathologic process which has been falsely designated as variola of hares, is nothing less than that constitutional and probably infectious disease described by me, which is characterized by the development of noduli and pustulæ in and upon the cutis, and which bears a resemblance to tuberculosis or syphilis and is designated in South Germany and Switzerland as "venerie" or "syphilis of the field hares."

Similar to the variola of hares is that of fowls, except with this difference: that by the latter an infectious exanthema much resembling true variolæ does in reality come to pass. This exanthema is, however, in its anatomical characteristics, sharply distinguished from variola; and, according to its essential character, is to be distinguished as a contagious epithelioma. I have observed and described this very interesting disease as I saw it in a henery in Zurich, and have again found exactly the same disease in several old preparations at München. This disease, characterized by its epithelial actions, presents itself as an epizootic pest of the domestic fowls, and probably also by other birds. It is chiefly localized upon the head, and produces a contagium of great

tenacity. I must also mention that in France the variola of the turkey, which probably should be classed here, has often been looked upon as the cause of v. ovina.

Variola vaccina.—As to its seat: we find vaccina as a local exanthema, as a rule, upon the teats; less frequently, concomitantly upon these and the udder; exceptionally, it is limited to the udder alone. V. vaccina distinguishes itself sharply from other forms in that it comes to pass almost always by female animals, and by these only upon the udder, and during lactation. After an incubation's stadium of three, four, six days, we see the development of the characteristic pustules following on a stadium of hyperamia, tumefaction, noduloi, and bullæ development, and completing their course in from five to six, less frequently in from eight to ten days. The number of variolæ is generally not extreme; it is seldom that we find twenty to thirty present at one time. The variolæ are generally lenticular to pisiform—sometimes larger, to two cen. in diameter—generally of a round form, the centrum somewhat indented; sometimes, however, the umbo entirely fails, or is only slightly intimated, or in the centrum we simply find a dark point; in other cases the variola is slightly elevated, conical or accuminated. Frequently the variolæ, as such, present nothing characteristic, are quite flat, and entirely without the pit; the entire process is so unimportant that it may be easily overlooked. The finer construction is similar to the human variola. That the variolæ have interiorly a retriculated structure is easily to be perceived, as upon puncture we are never enabled to remove the whole contents, but must press the same out. In the virulent stadium the contents is clear and colorless, later purulent and no longer infectious.

The color of the vaccine variolæ is on the one side determined by the *stadium of efflorescence*, on the other side by the color of the udder. While on the light udder of white or light colored cows the variolæ appear bluish-white and pearl-white, we find them yellowish in color on the dirty yellow colored udders of dark cows. Sometimes the variolæ have a silver lustre, lead-gray, amber color, or the lustre of mother-of-pearl. The especially peculiar silver or mother-of-pearl color, comes frequently only

to appearance, when we extend the cutis. The red hyperæmic umbo may occasionally fail, or is only intimated; on the contrary the subpustulous cutis, sometimes also the subcutis, is inflamed, indurated and distinctly prominent. Desiccation of the variolæ begins on the eleventh or twelfth day, and a tolerably thick dark-brown eschar is formed, with horn-like transparent edges. After the separation of the eschar, which takes place in the third week, we observe an oval or roundish cicatrix having little characteristic in its appearance, which remains apparent a long time.

The non-concomitant eruption of the variolæ which frequently comes to pass, is especially worthy of our attention; by means of it, we see fresh bullæ and pustulæ by the side of desiccated eschara. This important circumstance has been especially emphasized by Hering and Reiter in opposition to the description of Sacco; and Reiter says expressly, that by the original bovine variolæ the entire development of the variolæ does not take place at one time, therefore they present a variable form and size; and that the retrograde processes correspond to this manner of development, so that the course of the individual variola is an acute one and completed in five or six days, and that developing and desiccated variolæ are present at the same time. The later erupting variolæ have, however, the same virulent contents as those primarily developed. I shall have again to refer to this irregularity in the eruption of the bovine variolæ, which is full of ætiological importance. I will here remark, that in contradiction to the same, inoculated bovine variolæ by cattle and man develop all at one time, mature at the same time, and are almost all alike in size and form.

From the above, which has by far not exhausted the range of possibility, you may see how difficult it is to present a "school picture" which is able to represent all the various forms of bovine variolæ; the same vary with regard to their eruption, their pit and umbo, their circumference, color; and it is easily conceivable that true variola vaccina may be as often mistaken and considered as a false form, as the contrary.

(*To be continued.*)

ANATOMY OF REGIONS.

Translated from Peuch and Toussaint, Precis de Chirurgie Veterinaire, by A. Liautard, M.D., V.S.

CONTINUED FROM PAGE 326, VOL. I.

AUDITIVE APPARATUS.

Serving to the perception of hearing, it comprehends three parts, one of which only is visible externally. It is the *external ear*, simply called the *ear.* The other two are concealed in the thickness of the temporal bone. They are called the *middle* and the *internal ear.*

EXTERNAL EAR.

It is limited externally by the concha or pavilion and a narrower canal formed by an incomplete annular cartilage and a bony canal, named in descriptive anatomy the *external auditory canal.* The membrana tympani separates the external from the middle ear. The interference of the surgeon is generally only applied to the external ear.

The pavilion of the ear has the form of a funnel notched upon one of its sides. Its mobility is quite great; thus the animal can at will turn its opening in all directions. The motions of the ears are independent from each other. The dimensions of the ears vary in limited proportion, a small being always a pretty ear. As for the direction, the ear must be vertical; dropping ears generally indicating a lack of energy. Two different organs constitute the pavilion of the ear: the outside, where the skin lines the internal face and reflexes itself upon its free border to cover also the external, including in its layers the cartilaginous frame. Externally, the skin is thin and generally covered with short hairs, those of the interior of the ear being much longer and finer. They somewhat conceal the opening of the auditory canal.

The concha gives the ear its form; thin towards its free border, it thickens as it becomes narrower; in its inferior part it forms only a tube about one centimeter in diameter, which through an annular ligament is continued and attached to the external auditory canal. It is not properly speaking a ring, but a cartilag-

inous band whose two extremities converge towards each other like the rings of the trachæ.

And again, the external auditory bony canal, hollowed through the thickness of the tuberous portion of the temporal, is closed at its bottom by the membrana tympani, which separates the external from the middle ear.

The auditory canal runs partly into the annular cartilage, as well as this one does for the cartilage of the concha.

A peculiar little muscle, the mastoido auricularis, laying against the internal side of the concha, has for duty to bring these three parts close together, a very limited motion.

The skin, at the annular cartilage, assumes characters which make it resemble mucous membrane; it contains a large quantity of peculiar glands analogous to sebaceous glands, the ceruminous glands, which secrete a peculiar substance, untuous, of a yellowish color when fresh, but ordinarily blackened with dust, the *cerumen* which is always found there varying more or less in quantity. It is possible that through an exaggerated secretion, this cerumen may accumulate in such quantity as to obliterate partly or in toto the external auditory canal. Cleanliness, however, remedies this trouble easily. In some special cases, by the itching it gives rise to by becoming irritating and rance, the cerumen gives rise to symptoms of vertigo. I am unable yet to say if it is this cerumen which is the cause of a peculiar affection, which I have seen in rabbits, and whose symptoms resemble those of cerebral lesions of the pons varolii, or of the cerebellous peduncles. The animal has a tendency to roll upon itself, or to turn round. At the post mortem, and already during life, when examining the ears, the auditory canal may be seen filled with concreted pus, and the membrana tympani perforated. The purulent collection has also penetrated in the semi-circular canals and the trochlæ. The irritation produced upon the extremities of the auditory nerve may be the cause of the symptoms exhibited by the animals.

The membrane of the tympanum is a membranous sheet separating the external auditory canal from the middle ear; it is oval, very thin and slightly concave; its circumference is attached upon the tympanal circle, small frame almost circular, but notched above.

This membrane has three layers: a middle one, fibrous, forming the membrana proper; an internal, the mucous membrane of the middle ear; and an external, formed only of the epidermic layer of the skin of the external ear.

We must also mention the presence of an adipous cushion which is always present, even in the leanest animals, and which surrounding the base of the concha forward, inwards and backwards, facilitates the motion of the organ.

Blood Vessels and Nerves.—The arteries of the ear are: the anterior auricular, coming from the temporal trunk, and which carries the blood to the internal face of the concha; the posterior auricular, furnished by the external carotid which runs between the skin and the cartilage—one of the divisions of which goes to the middle ear, and another to the adipous cushion.

The veins of the same name are larger than the arteries. They often anastomose together. The anterior auricular vein is almost always double.

The nerves are furnished by the second cervical pair and by the middle auricular, a branch of the facial. The former goes to the external tegument. The branches of the second going to the ear, are distributed to the internal face of the concha.

The diverse motions of the ear are produced by the muscles already described in the temporal and parotid regions.

The parotido auricularis carries the ear down and outwards; the zygomatico auricularis, external temporo auricularis, and external scuto auricularis, carry the opening of the concha forward; the internal temporo auricularis is antagonist to the parotido auricularis, therefore an adductor of the ear; the internal scuto auricularis turns the opening of the cartilaginous concha outwards. Of the three cervico auricularis, the superficial pulls the ear backwards and downwards, so do the middle and superior, but their insertion outwards on the concha, allow them to turn the opening of the cartilage outwards, and even backwards, according to the extent of their contraction.

Differences.—The size of the ear of the *donkey* and of the *mule* are proverbial; it is much longer than that of the horse, and is necessarily more inclined outwards. The thickness and

the greater weight of the cartilage of the concha necessitate a great force in the motor muscles of the organ.

The ear of the *ox*, more widely open than that of the horse, is depending outwards, its forward and backward motions being specially very developed.

The ear of the *cat*, conical, ordinarily erected, pointed, has an opening turned forward; its motion outward is always limited.

In the *dog* is found a great variation, according to different breeds—something erected and short, more or less, it may be long and hanging and covered with more or less long and silky hairs. It is customary to cut a portion of the concha in some breeds, the hemorrhage accompanying the operation being of no consequence.

The *pig's* ear varies much with the breed; it may be short, erected and pointed, or long and hanging, flattened and folded as in some dogs.

That of the *sheep* and *goat* has the external characters of that of the horse, with the inclined direction of that of the ox. In the breeds where the horns have a spiroid direction, as in the merinos, it makes its exit through the center of spire.

The little importance offered in the surgical point of view, in animals, by the middle and internal ear, induce us to pass them over without mentioning them. Rarely is there any occasion to observe diseases of the organs situated as deeply, and should a diagnosis be made of an affection of the internal ear, the propriety of an operation on it would scarcely occur to the surgeon.

In few cases, specially in dogs, diseases of the middle ear, and specially the perforation of the membrana tympani have been noticed.

The middle ear of the horse is remarkable by its communication with the guttural pouches already described.

I do not know if difficulty of hearing in cases of purulent collections of this pouch have been noticed. However these troubles may exist, as the guttural pouch communicates through the Eustachian tube with the box of the tympanum.

The physiological function of the guttural pouch is not well known. Is it in relation with the function of audition? Has it

only for object to give more width to the base of the cranium, thus to increase the size of the head without increasing its weight, and then fulfil a role similar to that of the sinuses of some cranian bones? These are questions yet unanswered, and that can be elucidated by close attention upon animals in which a diagnosis of complete repletion of these cavities could be made.

(*To be continued.*)

EDITORIAL.

AMERICAN VETERINARY COLLEGE.

The fourth annual *Announcement of the American Veterinary College* has just been issued, and all the friends of that institution will congratulate the Board of Trustees on the success which has crowned their efforts in establishing publicly in such official manner their legal rights to carry on their good work. The written opinion of the Attorney General leaves no more room for the doubt which might have existed as to the value of the diplomas and degrees granted by this body, under the recommendation of their faculty; but that is not the principal part, nor the most important step, obtained by the American Veterinary College. It is the recognition which is given them by the Board of Regents of the University of the State—a recognition which that Board is very shy of granting, and which is only given to schools and colleges which hold in the State a high professional standing. That the American Veterinary College is the *first of its kind*, and as yet *the only one* which enjoys such a valuable privilege, is no slight evidence of the appreciation of its work, and must be gratifying to its Alumni in rendering, if it was necessary, their diplomas more valuable.

VETERINARY EDUCATION.

Some time since, a gentleman of Philadelphia, Mr. Horace J. Smith, started a new movement in the direction of improving veterinary education in the United States; and to reach that effect, urged the importance of a liberal endowment for the establish-

ment of a veterinary school as a branch of the University of Pennsylvania. Under the name of "A Plea for Veterinary Science," a long essay is published by him in the Report of the State Board of Agriculture of Pennsylvania; and having the professional ability of Prof. J. Law, the plea speaks well in favor of the establishment of such a department in common education with the curriculum of that well-known medical school. This essay lays more stress than has been done before, upon the establishment of veterinary departments in medical schools, and the co-education of the "Andro" and Zoopath, as Mr. Smith re-invents the names.

For the benefit of the members of the profession who have not received a copy of the "Plea," we make an extract from the paper of Prof. Law, which will be found of great interest and one of the most valuable arguments in favor of Veterinary Science.

JURISPRUDENCE

Read before the Montreal Veterinary Medical Association, by D. McEachran, F.R.C.V.S., President.

CONTINUED FROM PAGE 122.

SOUNDNESS.

Windgalls, if soft when the opposite leg is lifted to throw the weight on the leg, do not constitute unsoundness; but, if hard, and accompanied by thickening of the tendon or distension of the capsular ligament of the joint, it is unsound. Anchylosis of the fetlock of pastern joints constitutes unsoundness. Thickening of the tendons or ligaments at the back part of the leg, however slight it may be, must be considered unsound. The suspensory ligament is most important; it may be thickened in its body or branches. Next in importance is the tendo-perforans; next, the metacarpal ligament, and then the tendo-perforatus. While an animal may be comparatively useful after injury of the two latter, he will seldom or never stand severe galloping after either of the former injuries. Osseous tumors of the large or small pastern bone, (*oss suffraginis or oss coronæ*) ringbone

which is a union of these two bones, (*Anchylosis*), whether complete or incomplete, is unsound. The size and form of the feet must be carefully noted. A very small foot, or a very large one, while they may be natural and may be healthy, indicate a tendency to lameness, but do not constitute unsoundness unless the size be the result of disease. General contraction of the foot or partial, that is, contraction of one quarter, may be caused by navicular disease, corns, or bad shoeing, and constitutes unsoundness. Corns, thrush, canker, seedy toe, sand crack, false-quarter, nuttor, pumiced foot, separation of the laminæ, resulting from laminitis indicated by flat sole, ridges on the wall, placing the heels down first and general stiffness of action, navicular disease, pointing, wearing of the toe of the shoe, wasting of the muscles of the shoulder, stiffness on starting, if not positive lameness, and in many cases thickening of the tendon and pain on pressure in the hollow of the pastern, dislocation of any of the joints of the limb, either partial or complete, is unsound. Knuckling forward of the fetlock, one or both, even in a slight degree, being indication of disease of the bones, (usually osteophytes), or contraction of tendons or ligaments, notwithstanding the contrary opinions usually given, must be considered unsound, not only as indicating disease, but by reducing the value of the animal. Proceeding to the hind leg, the quarter will be examined for atrophy or wasting of the muscles, indicatory of chronic lameness; the hip, for thickening of the tendon of the gluteus maximus or disease of the joint; the stifle, for distension of the capsular ligament, either of the joint itself (between the condyles and head of the tibia) or of the patella; the hock, for bogspavin and thoroughpin, either or both constituting unsoundness. Bonespavin in all degrees, or on whatever situation, is unsound. Cappedhock may be of such a nature as to be little detriment other than a slight blemish; on the other hand it may involve the bursa, the tendon, or the bone, and prove a serious and permanent injury. In all cases it lessens the value and is therefore unsound, but a modified opinion should be given according to the nature of the case. Curb in all degrees is unsound, more especially in crooked legs and badly formed hocks. The same remarks apply to the parts

below the hock as below the knee, and need not be repeated. All diseases of the skin, during their continuance, constitute unsoundness, but many of them are only temporary, easily cured, and a modified opinion should be given in such cases. The examiner having carefully examined the exterior, will proceed to have him tested for internal derangements, which are only to be discovered by the production of indicatory symptoms. Roaring, which is the name given to a hoarse noise made during inspiratiou, of which whistling, wheezing, and highblowing are merely modifications, is symptomatic of some structural change in the larynx, often atrophy or wasting of some of the muscles, disease of the laryngeal nerve, is unsound even in its slightest degree. It is to be detected by having the horse galloped at top speed. Thick wind, broken wind, chronic bronchitis, will be discovered by the same test; they are all unsound. Chronic cough, characterized by its short dry nature, not followed by clearing of the nostrils, is unsound. Adhesions of the pleuræ, indicated by short breathing and grunting when suddenly startled by raising a whip, or striking him on the ribs, indicates weakness of the lungs from previous disease, and constitutes unsoundness. All the diseases of the digestive organs, which are known to exist at the time of sale, render the animal unsound. Worms may be detected by the yellow mucus surrounding the anus, or by the tail having been rubbed, or they may be seen in the fœces. A horse known to be subject to colic is unsound, inasmuch as it indicates some organic, mechanical, or functional derangement which may cause death. Crib-biting and wind-sucking constitute unsoundness, as they invariably give rise to indigestion and render the animal less valuable and less useful. All diseases of the brain or nervous system known at the time of sale, even if they cannot be suggested by examination, staggers, shivering (*Immobilite*), chorea, (the most common form of the latter being stringhalt) constitute unsoundness. All diseases, acute or chronic, which cause even temporary alteration in the structure or functions of an organ, or system of organs, constitute unsoundness during their continuance, and the examiner must be careful not to overlook that which may appear trivial. Many a "slight cold" has resulted in

dangerous bronchitis or pneumonia, or has left a sequelæ chronic cough or roaring. Many a "slight weakness of the eye" has ended in blindness. Infectious diseases, such as influenza, strangles, catarrh, &c.; contagious diseases, such as glanders and farcy, should not only render the animal unsound, but a dealer who, while cognizant of their existence, exposes animals so affected for sale, should be severely punished and held responsible for all damages resulting from inoculation by them.

It will thus be seen that the duties and responsibility of a veterinary examiner are onerous, and require not only a thorough knowledge of his profession, but a certain amount of natural tact and quickness of observation which can only be acquired by experience. He must possess decision of character and firmness of purpose, to lift him beyond the influences of plausible representations or friendship, in the formation of his opinion. I trust the time has gone past when it is necessary to warn men of this profession against collusion with horse dealers. I feel satisfied, so far as those before me are concerned, it is unnecessary to refer to this practice; but it cannot be denied that connivance has often justly been charged to persons assuming the name of our profession, to the detriment of the whole body. Above all things, gentlemen, act honestly, uprightly, do justice to the best of your ability, be not influenced by flattery or friendship nor deterred by fear of offence, resting assured that "honesty is the best policy," and dishonesty will have its own reward.

EXTRACTS FROM FOREIGN JOURNALS.

By A. Liautard, M.D., V.S.

On the Pathology of the So-called Pig-Typhoid, by Prof. N. Osler, M.D.

This is a paper, an abstract of which was read before the Pathological Society of New York, in which a series of experiments and post-mortem examinations are recorded, and which were made by the author, in company with Prof. McEachran.

Presenting, first, a few experiments proving the opinions expressed by Prof. Axe and Dr. Kleine, in relation to the con-

tagious and infectious nature of the disease. The symptoms are spoken of principally drawing the attention to the irregular range of the temperature, to the peculiarities presented by the cutaneous eruption and to the diarrhœa, which cannot be regarded as a constant symptom. In the part treating of the Pathology, careful notice is given of the lesions found on the intestinal canal. Specific lesions are grouped by the author as follows:

"1st. A brownish yellow infiltrate, very like diptheretic membrane, involving only the superficial layers of the mucosa, but frequently very extensive. On section it extends for a couple of lines into the mucosa, and cannot be separated without removing portions of that membrane.

"2d. Small greyish elevated spots, varying in size, from a pin's head to a split pea, seated directly upon and involving the mucosa to a variable depth; frequently the edges of the projecting parts overlay the mucous membrane. Others, older perhaps, are seen in process of separation, as small central sloughs, divided by narrow grooves from the mucosa, which may even be elevated about them.

"3d. Patches ranging in size from that of a three-penny bit to a penny or larger, circular, flattened, internally adhering to the mucosa, yellowish-grey in color, sometimes dark in the centre, and usually presenting a concentric arrangement resembling a flattened out rupia crust, or the cross section of a calculus. Sometimes these plagues are avoided, and frequently two or three have coalesced. Their concentric arrangement is their most peculiar feature, and is best marked in the larger ones, where a central part can often be seen from which the process appears to have extended in zones. Some of the smaller ones differ from these, the surface being uniform and more prominent. On section the patches show a yellowish white color throughout, and involve the coats of the bowel to a variable depth; some being confined to the upper part of the mucosa, others extending through its whole thickness; while others, again, involve the submucosa and muscular coats. They are firm and tenacious, not friable, resisting the scraping of a knife better than the mucous membrane itself.

"4th. Uniform involvement of large areas of the intestine,

converting the mucous surface into a yellowish irregular structure, like wash-leather, and in some instances extending through all the coats to the peritoneum, rendering the wall thick and inflexible.

5th. In two cases most peculiar masses were met with in the colors, looking like warty excrescences, springing from the mucosa; they are oval, and lie transversally to the axis of the gut, encircling about three-fourths of the tube and projecting from half an inch to one inch into the lumen. In the transverse directions they present a rounded concavity, while in the long axis of the bowel they are convex; the surface is dark or yellow-brown, and sometimes shows concentric lines. On section a firm greyish-yellow structure is disclosed, very dense, and involving all the coats to the peritoneum, which is puckered and retracted over the site of the attachment."

After passing an examination of the histology of the lesions found, Prof. W. Osler closes the paper by the following conclusions:

"1st. The so-called pig-typhoid is a disease *sui generis*, presenting anatomical and clinical features distinct from any other affections.

"2d. It presents no analogies, either pathologically or clinically, with typhoid fever in man.

"3d. Neither has it any affinity with anthrax, as claimed by some continental writers.

"4th. If we take the intestinal lesions as characteristic, the disease must be regarded, with Dr. Murchison, as dysenteric in its nature, although the cutaneous and pulmonary affections, as well as certain of the clinical features, meet with no parallel in human dysentery."—*Veterinary Journal.*

IS THE HIGH TEMPERATURE OF SOME ANIMALS THE CAUSE OF THEIR IMMUNITY TO CARBUNCULAR DISEASES?

BY PROF. COLIN.

This is the result of a number of experiments made by this celebrated physiologist in opposition to others made which had a

tendency to show that if some animals were refractory to the contagion or inoculation of anthrax it was due to their high temperature. Performing those experiments upon six hens, two pigeons, a cat and a dog, in which the temperature of the body had been diminished by cold baths, Prof. Colin arrives at the following conclusion:

"1st. There is no constant connection between the normal temperature of these animals and their aptitude or non aptitude to contract anthrax. At equal degree some are, others are not apt to contract this affection.

"2d. The artificial lowering of the temperature of the gallinaceous to 40 degrees *c.* does no facilitate the development of anthrax, though at that temperature sheep, rabbits, and other species will develop it with rapidity.

3d. The lowering of the temperature at 38 and 37 degrees, in carnivorous such as adult cats and dogs, is also powerless in the development of the disease.

4th. The cutaneous or sub-cutaneous low temperature exaggerated even by denudation or cold bath seem to have but little influence upon the manifestation of the accidents on the parts where the virus has been inserted.—*Archives Veterinaires.*

A PLEA FOR VETERINARY SURGERY.

Abstract from the Report of the Pennsylvania Board of Agriculture.

BY PROF. J. LAW, F.R.C.V.S.

SEPARATE AND CONJOINED STUDY OF THE MEDICINE OF MAN AND ANIMALS.

We have seen that in the days of Hippocrates medicine was to a large extent one, the physician was, in many cases, a veterinarian as well, and took lessons in anatomy, physiology, pathology, and therapeutics from his practice on the lower animals. For many, this catholicity of feeling and action produced a breadth of

view and soundness of practice which has served to rescue their names from oblivion, and hand them down to us as the *fathers of medicine.*

In modern times a similar course has secured most of the great advances in medicine and surgery, and physiology and therapeutics. If we open a modern work on physiology, we see that almost every step in advance has been gained from observations made on the lower animals. To illustrate this would be to furnish a large volume. Our knowledge of the functions of the nervous system, of circulation, of sanguification, of absorption, of nutrition, of secretion, etc., is almost entirely due to observations made on the lower animals. As medicine has advanced, this investigation of the lower creation has been resorted to more and more, and can be traced down from the labors of Harvey, of Haller, of Legallois, of Charles Bell, of the Hunters, of Flourens, and of Majendie, to the great host that are now engrossed in this profitable field of study.

If we pass to pathology the case is nearly the same. Many of the most complex pathological processes owe the elucidation of their nature, progress, and results to observations made on animals. The phenomena of inflammation as a generic morbid process have been studied on animals in a way in which it would have been impossible to do on man, and the descriptions given of inflammation and its products, are descriptions drawn from animal pathology. Fever, too, presents facilities for study in animals, which could not be obtained in the human subject, and these have been availed of to elucidate points that would otherwise have remained in obscurity. (See as a single illustration of this, the English Royal Commissioner's Third Report on the Cattle Plague.) The service rendered in regard to the other morbid processes is well illustrated by the treasures of the Hunterian museum, and by the works of pathologists from Hunter's day to this.

In surgery an analogous obligation has been incurred. Plastic operations, the methods of repair in fractures, tenotomy, hæmostatics, subperiosted section, and a host of other brilliant advances in modern surgery, were based upon observations made upon animals. Some, indeed, like tenotomy, were first practiced by veter-

inarians on domestic animals, and afterward appropriated for the relief of man.

When we enter on the list of contagious and parasitic diseases, we are at once brought face to face with a sanitary question of supreme importance alike to man and to his living possessions. Several of the specific and contagious diseases of animals are communicable to man, with a more or less deadly effect. Many, also, of the parasites of animals inhabit the human body as well, and the result of their entertainment is not unfrequently fatal to the human bearer. As both the contagious and parasitic diseases are propagated by germs produced in countless numbers in the body of the victim, it follows that the aggregation in a limited area of men and animals, in which they can live and increase enormously, enhances the danger to both kinds of victims. If physicians are left ignorant of the affection in the beast, and veterinarians of the same in man, they each miss the golden link which would reveal the true nature and dangers of the disease, and enable them to contend with it successfully.

SPECIFIC DISEASES COMMON TO MAN AND ANIMALS.

Without entering extensively upon the subject, I will note a few of the more fatal diseases in which men and animals reciprocate:

Asiatic Cholera.—The implication of domestic and wild animals in this disease, has been extensively observed: In India, by Annisley, Tytler, Jamison, Searle, Chalmers, Rankin, Orton, Barrand, and others, and in Europe by Jænichen, Kleinert, Cohen, Hensinger, Carrere, Hildebrand, Hering and Dick. Recently Thiersch, Burdon, Sanderson, Crocq, and others, have investigated the disease, producing it experimentally in a great number of mice, guinea pigs, hedgehogs, pigeons and dogs. These experiments on the lower animals have served to clear up the nature of the disease, and to suggest a rational treatment, and, above all, a sound system of prevention which no observation of the malady in the human subject alone could have furnished. The physician who neglects such light, and confines his observations to the human patient, is an unsafe guide, whether in the sick room or as a sanitarian.

Hydrophobia—Canine Madness.—Everybody thinks he can recognize a mad dog, and many a poor brute, the victim of an epileptic fit, of a bone in the throat, or even a violent colic, has been hurried out of existence, under the conviction that he is rabid. Even among the medical profession, we find the most injurious blunders on the subject. How often do we read accounts of *hydrophobia* in man as the result of a bite from a dog which is known to be still alive and well. Two weeks ago I was asked to visit a case of this kind, in a boy of eleven years, who was suffering from paroxysms recurring every half hour or three quarters, and of whom it had been decided by physicians that he could not live over twenty-four hours more. One of the paroxysms had just terminated on my arrival, but I found no febrile temperature, no visual irregularity, and no mental susceptibility, such as characterize hydrophobia. His pulse was natural as regards number, but irregular alike in force and frequency, and altogether it was evident that he was a very nervous excitable subject, and the victim of one of those emotional forms of disease so well illustrated by the dancing mania, etc., of the middle ages. During the next three hours, in which the boy's attention was engaged and kept from reverting to his infirmity, there was no return of the paroxysms, and after this, (ten P. M.,) he went quietly to sleep. An enthusiastic student spent each day with the boy for a week, after which the little fellow returned to school happy and well. Many such cases might be described with a less favorable ending, and of which the brains and other structures have been subjected to microscopical examination, as illustrative of hydrophobia. Nor are mistakes on this subject confined to the rank and file of the medical profession. The learned Sir Thomas Watson, in his recent article on this malady, records his belief that "hydrophobia does not ever produce itself." This is a time-honored fallacy, but now abundantly disproved by accidental inoculations of those that attend on the victims and washed their clothing, as well as by the inoculation of animals with the saliva of rabid men. The dangers of such blunders and fallacies are too obvious to require comment.

Glanders.—Though known in solipeds as early as the times

of the ancient Greeks and Romans, this disease was only observed in man in the beginning of the present century. Then it was first recognized by Waldinger, of Vienna, and as attention was attracted to the subject, his discovery was soon amply confirmed from every side. What frightful sufferings and horrible deaths had resulted, at all times and in every part of the civilized world, before the discovery that man owed this disease to the domestic animals, can never be revealed, but from the number of cases reported on all sides, as soon as Waldinger's discovery became generally known, a very high mortality can be safely inferred. Here again we have a terrible example of the loss sustained by the dis-association of human and veterinary medicine. The criminal negligence of our State Legislatures to enact laws forbidding the use or exposure of animals suffering from this and other fatal disorders, contagious to man, may be in part charged on the apathy of the medical profession on the subject. The natural result has followed; many of our large cities swarm with glandered horses, which are habitually sent to the country for treatment or change of air, and severe losses are entailed in many localities. What is more to our present purpose, human victims are not unknown, one such having just come from under my notice, because the attending physicians honestly acknowledged that they knew little or nothing of the malady.

Tuberculosis.—Modern research, mainly in the hands of veterinarians, has established the fact that tubercular consumption is a specific and communicable disease, conveyable from animal to animal not alone by inoculation, but by feeding upon the fresh and even cooked products of the disease. Here again is a subject which has proved a battle-field for centuries for the medical men, has been definitely settled by a reference to comparative pathology, and by instituting a series of observations and experiments on the domestic animals. The importance of this discovery of the communicability of tubercle to animals and man, cannot be overestimated, and speaks with trumpet-tongue of the value of comparative pathology to the physician and veterinarian.

PARASITIC DISEASES IN WHICH MEN AND ANIMALS RECIPROCATE.

Diseases due to parasites, harbored by man and animals, are far more numerous than those dependent on specific disease poisons. We cannot here enumerate the whole, but must hastily refer to a few only of the more redoubtable.

Malignant Pustule, Malignant Anthrax, Anthrax Mycosis, Anthrax Baccihis.—This is one of the most anciently known of diseases, being almost certainly that which cut off the Egyptians and their cattle in the days of Moses, and that which swept down the Greeks and their live stock at the siege of Troy. Through the middle ages its ravages were frequent and extensive, the destruction falling with equal impartiality on man and beast. In the agriculturally undeveloped steppes of eastern Europe and Asia, such wholesale destruction occurs as a matter of to-day, and in our own Southern States severe losses are often sustained. Even in the North it is far from uncommon. I have known as many as fifty perish from a single herd in two weeks. Doctor Bell records the occurrence of the disease in an equal number of human beings, within a few years, and many of them in Brooklyn City Hospital. I am further acquainted with a number of isolated attacks in man, caused by inoculation from the diseased animal. Here, again, in several cases, the attending physicians failed to recognize the disease, on account of their want of acquaintance with the pathology of animals. We now know, from investigations conducted on animals, that this affection depends on the presence in the system of a vegetable parasite, a special development of a fungus, (Bacillus Anthracis,) which maintains its infecting properties only at a particular stage of development, but may be preserved for an indefinite length of time in buildings, yards, fodders, soil, and grasses, as well as in the dead bodies and other products of the diseased animals.

Milk Sickness.—According to Dr. Phillips, this disease is also due to vegetable fungus, which conveyed to man, in the products of the living or dead animals, produces a profound nervous prostration, with impairment or suspension of nearly all of the vital functions, and in many cases death. As the disease is produced in man mainly by the consumption of butter and cheese, and as

these products from infected localities are likely to be sent to a distance, it seems probable that cases of milk sickness occur, especially in the large cities, without any recognition of its true nature. A thorough course in comparative pathology would enable the physician to recognize these more readily, and to interdict such dangerous articles of food, through the agency of the city boards of health.

Vegetable Parasites on the Surface.—Of other vegetable parasites there need only be mentioned those productive of the different forms of ringworm, all of which exist in the domestic animals, and those causing thrush in the mouth of young animals. If the practitioner, medical or veterinary, is unacquainted with the habits of these parasites on animals and vegetables, he is not likely to prove a satisfactory sanitary adviser, however successful he may be in destroying the parasite in the individual case.

Entozoa.—Of entozoa or worms, man reciprocates with the domestic animals in entertaining at least six different species of *tapeworms*, some of them like *echinococcus*, productive of much suffering, and a fatal result in many cases; of one *trunatode* or *fluke*, and of three *round worms*, including the deadly *trichina.*

Epizoa.—Of animals that live on the surface, no less than a dozen species are common to man and the domestic animals, and though these are not usually dangerous to life, yet they will, in some instances, prove most inveterate and indestructible, and condemn their victim to a most miserable existence.

This hurried and imperfect notice of the maladies common to man and animals will serve to illustrate how much is lost by the separation of the two fields of medicine, human and comparative. If the above remarks have seemed to reflect unduly on the average medical practitioner, it is in no invidious spirit, but only because the object of the present paper is to show how much the medical profession may gain from a closer association with comparative pathology, and especially with veterinary medicine. Such a connection would accrue even more to the profit of the veterinarian, alike in giving him the status that he ought to possess, and in furnishing him more thoroughly for the practice of his profession. The average veterinarian is, to say the least, no better in-

formed on many of the points referred to than is the average physician, and broader views and sounder practice will come to both from the mutual cultivation of that field which is common to both. This is already recognized in the best medical schools of Continental Europe, and by their chairs of comparative pathology, filled by accomplished veterinarians, they are seeking to reap the advantage. England has recognized the same truth in associating with the Brown Institution—an endowed hospital for sick animals—a department for experimental research in comparative pathology, and a lectureship on the same subject. Oxford now follows suit in an endeavor to establish, within her academic shades, a chair of comparative pathology.

If we turn from physiology to the pathological action of medicines, the basis of all rational therapeutics, we find that here too a solid ground-work is laid in a careful observation and experimentation on animals. Take up any large work on therapeutics, and you find that nearly every drug has been thoroughly tested on the lower animals, and that its various known physiological effects have each been determined by such experiment.

Doctor Bell Pettigrew puts the case forcibly but thoughtfully, when he says: "No one can intelligently administer medicine to a human patient who is ignorant of the effects produced by it on the lower animals. A perfectly educated physician should also be master of the veterinary art."

Another eminent medical writer remarks: "That men should confine themselves to curing what they are pleased to call the lower animals to the exclusion of mankind, and the reverse, I cannot, and never have been able to understand, and I hope the day will soon come when he who medically treats mankind, may be looked upon as a dangerous specialist, if he has not attained his position by a comprehensive study of the diseases of the lower animals. That the sister study of human medicine should recognize the advantage of a knowledge of comparative anatomy and physiology, and overlook the vast and unspeakable advantage of a knowledge of comparative pathology is really inconceivable."

The London *Medical Examiner*, in announcing a department of *comparative pathology* in its columns, makes the following very

true remarks: "As much of our exact knowledge of the phenomena of healthy life, or physiology, has been obtained by observation on the lower animals, true scientific pathology, or a knowledge of the phenomena of disease, must be based upon the study of diseases and morbid processes occurring in other animals besides man. It is a recognition of this fact that has led to the proposed establishment of a chair of general and comparative pathology at Oxford, a university which has been foremost in promoting the science of biology. There are many reasons why animal pathology and medicine should precede or accompany the study of human medicine. Living under more simple conditions—conditions more approaching those of nature—the transition from a state of health to a state of disease is more easily traced, and diseased processes are more simple in the lower animals than man. The student of animal pathology and medicine is able to command the circumstances of disease to an extent quite unparalleled in the case of man. Both the individual and his environment are to a greater extent under the control of the observer, and by varying the condition of life he is able to modify the course of the disease. There is thus afforded to him an opportunity of calling into play, of varying or of removing the conditions which appear to produce disease, and thus to determine the essential factors of morbid processes. In the human subject one of our greatest difficulties is that conditions cannot be repeated or varied at will, and thus arises the uncertainty which hedges in the study of medicine, however indefatigable and sincere may be the student. Again, in the lower animals morbid processes can be studied in all stages of their progress, for the victim of disease can at any moment be destroyed. In this way essential and early changes can be differentiated from those which are secondary and mere complications. It is the privilege of our office to prolong human life to the utmost limit, and hence we are unable to employ the scalpel and the microscope, or the test tube to the dead body, till such time as the original morbid processes have become greatly obscured, if not completely effaced. Such knowledge is necessarily one-sided; for by studies prosecuted on the dead, we are often unable to discover the subtle and delicate point on which is

suspended the brain, oscillating between recovery and death. It is in the domain of preventive medicine, however, that we have most to expect from veterinary medicines. Here the scientist is not only able to indicate the measures necessary for the suppression of disease, but can get legislative authority for enforcing them. From knowledge gained in this department, we shall be able to apply the remedies necessary for the prevention of human diseases."

"Many of the greatest achievements in physiology, pathology, and therapeutics have been gained in the sphere of the veterinary physician by students and practitioners of human medicine. The more advanced position of human medical science explained this anomaly in former times. But now veterinary medicine has emerged from the empirical to the scientific stage; and the veterinary profession will be expected to contribute more and more to the knowledge of our science and art. The training of the veterinary practitioner is daily becoming more comprehensive and more careful, and the fruits of this are seen in the rapid advances of veterinary science, and in the culture of those engaged in veterinary medicine and surgery. Veterinary literature has made enormous progress during the last few years, and the most brilliant future may be predicted for it. Now that veterinary medicine has been established on a scientific basis, the time has come when the bonds that unite the students and practitioners of human and veterinary medicine should be knit more closely, and the two branches be brought into more intimate relationship. Human and veterinary medicine are progressing along the path of knowledge, but they are separated from one another. Fellow-travelers along the steep and rugged course, they should advance hand in hand, helping each other to surmount the obstacles they will have to encounter on the way. Each has much to learn of the other. While the objective side of disease is often studied to the greatest advantage in animals, the subjective can be studied in man alone. It is, therefore, no less necessary for the veterinary physician to have a knowledge of disease in man, than it is advantageous for the practitioner of human medicine to study diseased processes in the lower animals."

This last remark is suggestive of the true remedy for the present undesirable state of things. Both branches of medicine suffer from separation. Each is necessary to the rapid progress and highest advancement of the other. The obvious necessity is, that both should be taught in the same institution. While this will secure breadth, fulness, and soundness in the instruction, it will attain still another desirable end—the teaching of both at a cheaper rate. Much of the ground gone over by the student of human medicine must also be covered by that of veterinary medicine. Many subjects may, therefore, be taught to a large mixed class of students of those two branches, thereby saving the time and expense of two teachers, while the increased numbers and greater resources will enable the institution to make this one course much more effective than any two such courses, delivered by different men, in distinct colleges, and with less perfect appliances. It is only when the medical and veterinary students enter on the study of those subjects which are peculiar to the practice of the two branches of medicine and surgery, that they must study in distinct classes and under special teachers.

Before leaving this subject, one other remark on the words of the *Medical Examiner* is demanded. The full advantage to the medical profession from association with the veterinary, is only to be obtained by the experimental investigation of disease. In practice, the veterinarian has rarely any advantage over the physician of man, in the power of sacrificing the sick in the interests of science or of changing the environment and conditions of life. To avail of this, provision must be made for a certain expenditure for experimental purposes, and any such outlay with competent scientific supervision, must prove of the greatest advantage to both physician and veterinarian.

ADVANTAGES OF THE DOUBLE QUALIFICATION (MEDICAL AND VETERINARY) TO COUNTRY PRACTITIONERS AND THEIR PATIENTS.

The association of human and veterinary medicine in one educational establishment would render it easy for young men looking forward to a country practice to extend their curriculum, so as to secure degrees as "human" and "animal" physicians.

The double practice would, in many cases, add largely to their emoluments as well as their usefulness; their employers would esteem them all the more highly that they could turn to them with confidence to prescribe for their valuable stock, as well as their sons and daughters, while to the physicians themselves would belong the enviable distinction of conservators of the lives and fortunes of the community. In many districts where two professional men, medical and veterinary, could scarcely subsist, one with the combined qualification would make a good livelihood. If properly educated, he would prove a sounder guardian of human health, from his acquaintance with the diseases of the dependent animals, and he would be a safer veterinary physician for his extensive acqaintance with the pathology of man. His better position and more abundant resources would enable him to keep up with the times, and to avail for his employers of the most recent advances in pathology, therapeutics and sanitative, so that the dweller in the remote country districts could have nearly all the advantages of the denizens of the city. Finally, the practitioner would have the uncommon advantage of a most extended field of observation, and not only would he be enabled to add many new facts to pathology, but he might gain a breadth and soundness of erudition, that would, in some cases, especially fit him to be a teacher of the science.

In advancing such a proposition as the above, I by no means advocate that the simple physician should encroach on the sphere of the veterinarian, or the veterinarian on that of the physician. It is a matter of common observation with veterinarians, that when a physician prescribes for his own horse, he is as likely as not to blister the shoulder for a lameness due to disease in the foot, or to give a few grains of tartar emetic, which would be entirely inoperative on the equine system. So with the veterinarian, in prescribing for his own family, he is stepping out of his sphere, and is likely to act detrimentally, rather than beneficially. For this new field, I propose a new style of practitioner, more comprehensively educated and equipped than either physician or veterinarian—one who has given a longer time to acquire his education, who has earned both degrees by faithful and conscien-

tious study, and who, in the hospitals for men and animals, has made himself thoroughly acquainted with the diagnosis and treatment of the maladies of man and beast. In many sparsely populated districts, a practitioner of this kind would be a most desirable acquisition, while in the cities and densely peopled localities, specialists must continue to pursue human and veterinary medicine, surgery, ophthalmology, otology, gynæcology, dentistry, &c., &c.

VETERINARY PRACTITIONERS NEEDED IN THE UNITED STATES.

There is no means of ascertaining the number of educated veterinarians in the United States, but it may safely be affirmed, that nearly all such are confined to the large cities. In the country districts, where the greatest and the most valuable part of our live stock is to be found, they are few and far between. In the absence of these data, we may estimate the number of live stock of our own and other countries, and deduce from this the requisite number of veterinarians. Great Britain, which stands low in the European scale, as regards veterinarians, owns over forty-two millions head of live stock; and not much less than two thousand veterinarians. If, however, we cut off sheep and swine, for which the English veterinarian does little or nothing, we find but three millions nine hundred thousand head of horses and cattle, or more than four thousand for every veterinarian in the country. The ratio adopted in the calvary, of one veterinarian for each regiment of one thousand, would necessitate a four-fold increase of the profession.

Turning to the United States, we find over one hundred million head of live stock, or if we cut off sheep and pigs, we have still left over thirty-nine millions horses and cattle, very nearly five times the number found in Great Britain. If, therefore, Great Britain requires two thousand veterinarians, we require no less than eight thousand, or if we were to estimate according to the number supplied to the British army, we would swell the number to thirty-nine thousand.

The following tabular arrangement will present very forcibly the needs of the United States, as compared with Great Britain.

	United States.	*Great Britain.*
Horses, asses, and mules, ...	11,149,800	2,790,851
Cattle, ...	27,870,700	6,115,491
Total horses and cattle, ...	39,019,500	8,906,342
Sheep, ...	35,935,300	31,313,941
Swine, ...	25,726,800	2,422,830
Total live stock, (except carnivora,)	100,681,600	42,643,113
Veterinarians, actual, (probably,) .	200	2,000
Veterinarians needed in ratio with live stock, ...	4,762	
Veterinarians need in ratio with British Calvary, ...	39,019	

It is perhaps an extravagant estimate to set our needs down at four thousand seven hundred and sixty-two, or one veterinarian to every twenty thousand head of live stock; though if these could be collected within a reasonable area, we would find more than enough to do in attending to their health. The objection is not want of practice, but the fact that in many places the stock is scattered over such a wide district, that it would not pay the veterinarian to visit them at rates, which the interests of the stock-owner could allow. If, however, we could furnish such districts with practitioners having the double qualifications, they could find within a reasonable area a sufficient number of patients to make it worth their while to stay, and worth the people's while to employ them. One such practitioner to every two hundred square miles is surely a very modest estimate, and this would give us considerably over five thousand in the States of the Atlantic slope.

VALUE OF VETERINARIANS TO THE COUNTRY.

The value of the present services of veterinarians in the United States must be a very meager sum comparatively to what it might be if veterinary science were availed of as it ought. Some estimate of the value of a scientific veterinary supervision, may be deduced from the fact that prior to 1836, the losses in the French cavlary amounted to one hundred and ninety per

one thousand per annum, but the veterinary care has reduced this of late years to sixty-seven per one thousand yearly. In the English cavalry the record is far better, and largely because a superior stable accommodation has been secured. Colonel Sir F. Fitzwygram, himself a veterinarian, in a recent lecture, gave it as the result of his experience, that veterinary sanitary science had reduced the loss of horses in the English cavalry regiments to a minimum, and the annual "casting" of horses to ten per cent; giving an average service of ten years to each horse carrying two hundred and fifty pounds on its back, at a rapid pace, over rough ground. The same authority recently mentioned an instance in which the supervision of a veterinarian led to a yearly saving of $30,000 in a shed of four hundred hard working horses. An instance almost as striking occurred in the practice of a friend of the present writer, in charge of the horses of a large colliery company in Durham, England.

But it is in the department of *sanitary or preventive medicine* that the value of the work of the veterinarian is the highest. Ordinary diseases of animals carry off isolated individuals only, and the full measure of the loss is in every case seen and appreciated at once. One case of sickness or death brings no danger to the other stock, and the owner can, in any case, estimate whether he can better afford to lose his property than to incur expenses for medical treatment. But with animal plagues, the first case of illness is pregnant with a mighty and ever increasing danger, not only to the other stock of the same owner, but to all the live stock of the nation, and even in some cases to the citizens as well. Taught by the bitter experience of many centuries, the separate nations of Europe now avail of veterinary science to save them from yearly losses of millions of dollars by animal contagia. A country like England, which has been beguiled into a false sense of security, by its comparative isolation, and that has failed to avail of this modern science, has been drained of $40,000,000 in one and a half years by one plague, and of a regular tax of upwards of $15,000,000 per annum by another.

Coming to our own land, we find a loss by one plague of swine

in a single year, (1876,) of no less than $20,000,000. It is the province of veterinary science, acting with government authority, to attempt the extinction of this plague, and there can be little doubt that at a small expense comparatively, this malady may be crushed in the bud in whatever locality it may show itself. Beside our other indigenous plagues and parasitic diseases in domestic animals, we are continually threatened with foreign animal contagia, against which we have no reasonable protection. The present treasury orders on this subject, admit all "*blooded*" animals on the strength of a consular certificate of soundness, which is only equivalent to a free invitation to animal diseases in general. The only safe position to occupy in this matter is that of a careful examination of every imported animal by a veterinarian, of a quarantine under veterinary supervision, and of such a duration as will exclude the possibility of the dreaded disease being harbored by the subject, of a thorough disinfection of the surface of the imported beast, and of all articles used about it, and finally of the systematic destruction of all fodder and litter imported with such animal. The limited character of our importations of live stock, would allow of such restrictions without any perceptible injury to commerce, or to our national prosperity; and the ever threatening dangers against which they would secure us, are in their nature almost illimitable as to extent and duration. The most insidious, and therefore the most dangerous of all cattle diseases, (*lung fever*,) we now harbor in our midst, and while it makes slow progress owing to the opposing current of cattle traffic from the west, and the want of temptation to transport our common eastern cows into the cheaper western herds, yet it is steadily encroaching on new territory, and now numbers its victims among several high class herds. Any day a bull from one of these thoroughbred herds may be sent west for the improvement of the native stock, and may thereby introduce this disease into our unfenced stock ranges, when it will be practically impossible to eradicate it. The same malady imported into the open stock runs in the Cape of Good Hope and Australia, swept the herds off in a rapid destruction, and successfully resisted all efforts to extinguish it. The same holds good with this and other plagues on

the open steppes of eastern Europe and central Asia. There, animal plagues in general find a perennial home. From these the best directed efforts of a thoroughly equipped sanitary commission have failed to eradicate them, and against these eastern plagues the adjacent European nations can only protect themselves by a most elaborate and expensive system of frontier inspection and quarantine, which is paralyzed on the occasion of every great war, and occasionally even circumvented by smuggling and corruption, with the most disastrous effects to the western countries.

Our cattle traffic from the west and south is so extensive that any efficient system of examination and quarantine, sufficiently extended to exclude this disease, would be impracticable, as the trade would be thereby completely suspended. Since, therefore, the trade must go on, the inevitable result of the infection of our western stock-runs will be the infection of our eastern States throughout, and a yearly loss which can easily be estimated by the corresponding loss in Great Britain, from the same disease, since its importation, in 1842. Since that time Great Britain has lost in deaths alone, from this malady, on an average, $15,000,000 per annum. This, it will be remembered, is on a stock of six million head, from which fail to be deducted the great herds of black cattle bred in the highlands of Scotland, which have hitherto escaped infection, owing to the absence of the importation of strange beasts into their midst. Taking the same ratio, without this deduction, for our twenty-eight million head of cattle, our general infection would lay us under tribute to the extent of $60,000,000 per annum. Or if our herds increase at their present rate, our losses, by the end of the century, would amount to a yearly total of at least $120,000,000.

This it is the province of veterinary science to save to the country, by crushing out this most insidious and fatal malady, while it is still confined to the enclosed farms of our eastern States. At present this can easily be accomplished by sound and rigidly enforced veterinary sanitary laws. If the United States decline to avail of these, the sad truth of the above mentioned representations will burst upon them with overwhelming force on some, perhaps, not distant day, and they will vainly turn for help to the

long neglected science of veterinary medicine, at a time when it can no longer offer a perfect protection.

We have just had an instructive instance of the disastrous results of neglecting the warnings of science in the case of the invasion of the *potato beetle.* Professor Riley warned the nation of the great losses that would result from its eastward progress, and showed how, by the outlay of a few thousands, it might be prevented from crossing the Mississippi. Instead of heeding his advice, the Missouri government, in a fit of blind retrenchment, abolished his office of State Entomologist, thereby effecting an immediate saving of $3,000 a year, while the *potato beetles*, allowed to cross the river, at five separate points only, have laid the eastern States under a contribution estimated at $100,000,000 per annum.

Even more disastrous would be the acclimatization of the *lung fever* in the western States and Territories. Hence the urgent necessity that the country should foster veterinary sanitary science, and avail of it to obviate such a catastrophe. So, too, with regard to other animal plagues, indigenous and foreign. But to accomplish this in the best and cheapest manner, in a thinly peopled country like the United States, we must have the new style of practitioner, of human and veterinary medicine, and hence the surpassing importance of medical schools in which both will be taught in the most thorough manner. It speaks well for the advanced and far-seeing views of the faculty of the University of Pennsylvania, that they are the first among American institutions of learning to have recognized the importance of this alliance between the two sister professions of medicine, and it is to be hoped that the Legislature will prove themselves equally liberal and true to the best interests of the country in providing the means for a firm and permanent consummation of the union.

CORRESPONDENCE.

HYDROPS PERICARDII.

By E. F. Thayer, V. S.

On Monday last, at twenty minutes past eleven o'clock, I was called to see a horse belonging to Messrs. Blanchard & Atkins, of Newton. On examination I found the animal suffering considerable pain, although not of a violent character; the head was depressed, the tongue hanging out of the mouth, occasionally the head was turned towards the abdomen, sometimes to one side, then to the other; apparently there was a desire to lie down, as the hind legs were drawn forward, but he seemed afraid to do so; pulse 60 and full, but not hard. He was then in a stall. On being led into the floor, I attempted to examine the mouth, but was unable to open it, which excited a suspicion of tetanus; an examination of the muscles satisfied me that the apparent rigidity was caused by spasmodic contraction, and soon after the mouth could be easily opened.

As it was evident that abdominal pain was present, I administered an anodyne stimulant; before twelve o'clock, he quietly laid down, and after raising his head and turning it to his side a few times, he remained quiet. I then left him for a few minutes. On returning I found him easy, the hostler remarking, "he is all right."

At the next visit, made two and one-half hours after, he was dead. As the symptoms were peculiar, I requested permission to make an autopsy; on the following day, in company with my assistant, J. S. Winchester, D.V.S., an examination was made. The abdominal viscera was first removed; the general appearance was slightly pale, the liver and kidneys were firm, the stomach contained a fair quantity of food and appeared healthy; on separating the small intestine from the mesentery, about four and one-half feet were found to be of a reddish hue; the whole tract was laid open, and with the above exception was in a normal condition. The diaphragm was then removed; the lungs were healthy, the pericardium contained nearly a pint of dark red fluid, the walls and valves of the heart were normal.

Remarks.—The animal had been driven in a grocer's wagon about two months, without showing any symptoms of disease, eating and drinking with almost a ravenous appetite. Three days before the attack he injured his knee, in the stable, it was supposed by getting cast, and had not been worked, which was all the time lost in the two months. The stable keeper informed me that he had known the horse for five years, and that he had been healthy. The fact that the animal had been able to perform the labor required until the injury occurred, and that no evidence of sickness was present until five hours previous to his death, tends to make the case particularly interesting.

WEST NEWTON, May 24, 1878.

AN OPEN LETTER TO WOULD-BE STUDENTS OF VETERINARY MEDICINE IN THE UNITED STATES.

BY F. S BILLINGS.

During the past few months I have had the pleasure of answering several letters from countrymen on the above subject, and as there may be others who are desirous of like information in a more concentrated form than it has otherwise appeared from me, I take this way of gratifying them ; at the same time I would earnestly recommend young men desiring to enter the veterinary profession to read the series of papers which have appeared from me in the *Turf, Field and Farm*, and the revision of the Schools of France, which came out in the *Spirit of the Times* of May 26 and June 2, 1877. I am fully aware of the responsibility resting upon me in thus offering advice to young persons in selecting the place by which they are to gain the means of obtaining not only a subsistance, *but a position in the world*, and in a certain sense of the word I leave the question open to the aspirant, for it depends on him, even more than the school, what the result will be.

Before speaking of schools, however, I feel impelled to call the attention of every aspirant who is on the verge of entering our profession, against a danger to which all of us are liable, and which has, I believe, wrecked many a good man, and has been

and is the curse of our existence, and will continue to work against our elevation so long as we exist as a profession. I mean the association with "hoss men," the "talking hoss," loafing around livery stables, having offices or seats or desks, yes, order boxes in such places; knowing the horse we meet, but that does not mean we shall swallow him and sleep with him, it does not mean we must select for associates "horsey-blackguards" of every description. No one need feel anxious that the writer does not intend a practical education as well as scientific. Many a person who reads this knows well enough he has paid dearly for his whitling, and knows of what he speaks. These so-called "horse-men" are unwittingly the enemies more than they are the friends of our profession; they are self-conceited, ignorant, and bigoted; they will quack it until their horses are as good as dead, then send for us, and because we cannot do more than a God, will condemn us and our profession on every side. Beware of them, I say, treat them with dignity and respect, serve them only when called by them, and be sure they will equally well respect you, and be far more likely to call you in, as they learn to respect you, than they have in times past. There is the sharpest distinction between the "horse-man" and the intelligent lover of the horse and other animals, the educated breeder or the educated or intelligent farmer. Seek the latter; shun the former.

From my writings it is self-evident that I shall not advise any one to try the schools of Britain; they are poor, except practically, and give a man no scientific foundation, or other collateral education and stimulus by which he will be enabled to rise in the world. In plain English, they make Routiners—nothing more. These schools are fully as expensive as those in America, and the student is overloaded with examination fees, and has to find the animals for his anatomical studies at his own expense; further, the expense of living at the capital of England is certainly not much less than in other large cities. Of the American schools, the aspirant can inform himself. I should certainly not recommend either of them to any one who has *means* and *will* enough to undertake the course at one of the best continental schools. One thing, however, I will not pass by without notice; in certain

quarters, there has been a cry raised against the legality of the diploma given by the American Veterinary College, of which Mr. Liautard is Director. In the first place, that is a pretty noise to make in a land where there are fifty or more medical schools, most of which are nothing more or less than quack-producers. "I haint bin to no Harvard, I kim from Chikaga," said one of these sprouts in my presence some time since. He remained two weeks in Berlin, paid for a series of lectures by Virchows, Laugenbeck, and others, went to Vienna and did likewise, and, by the way of Paris, was home in America in ten weeks. *And had studied in Europe.* It may not be known in America, but the fact is, our national reputation is being daily buried deeper and deeper by these "*sprouts of Americanism*;" every hard-working medical student who is now or has been in Europe can testify to the mortification he too often has to bear, by being asked if he knew Dr. ———. The truth is, all our medical schools are private schools, with this difference: If a father sends a son to a common private school to be *educated*, he ascertains if it be good; if he sends him to a medical school he *wants him put through*; this is American. All medical schools in our country, whether organized under a general law or a special law, are dependent on the character of their teachers and their graduates for their reputation; and the veterinary schools are no different. The "*no charter*" of the one is better, to my mind, than the "so-called charter" without State inspections or responsibility, of the other. The thing can very well be compared to the *liquor laws*; on the one side we have a man selling liquor, giving good wares, doing the best he can, because he values his reputation; he does business under a general law, which requires a man to be honest and do his duty. On the other side, we have persons doing business under a special law, but the law does not say how they shall do it, or guarantee to the public the quality of the article they shall receive. Such a law is self-evidently a dead law, and the charter far worse than no charter at all. The V. S. of the one is fully as good as of the other; the question of instruction remains for the aspirant to satisfy himself.

Of the veterinary schools of France, I would say a few words.

The course is four years, of two terms each of about five months, making nearly ten months a year study. These schools are eminently practical; they place immense stress on the value of anatomy in all its forms, and also give great attention to operative surgery, and are admitted to be the masters in these two branches by nearly all Germans. The balance of the education is good, and there is no doubt that a person going to either Alfort or Lyons will be an intelligently educated man and fine practitioner, and further, will gain much collateral information of value. The cost is, I think, 200 francs ($50) per year. With an examination fee, the student will find every opportunity to study, and abundance of anatomical material free of extra cost. I can but cheerfully recommend these schools to my countrymen, and to one desiring only a first-class practical education, with a fair basis, there will be no disappointment.

I come now to the more difficult part of my task, the schools of Germany, or rather the school at Berlin. I say more difficult, because whether a man proves a success, finds himself fully satisfied, depends infinitely more upon the *man* himself at Berlin, than at the French schools. I have above recommended the man desiring a really practical education to go to France, and I warn any one who is not a natural-born horseman, and who has had some experience in such matters, or who cannot apply a bandage with all the skill of a Mace or Woodruff, either to learn it first, or not to come to Berlin, unless he intends to go to France afterwards; for that part of our art, which can be called clinical handiness and skill as well as horsemanship, is not only foreign to the Berlin school, but foreign to the nation. On the other side, to the man to whom these things are natural, (and what man in America would think of entering our profession to whom they are not?) or to one who feels himself confident of acquiring them; and furthermore, to one who desires a truly scientific education, who is burning over with ambition to enter into the "holy of holies," and to become more and more acquainted with the hidden processes of animal life; to one who desires to gain the spirit of this glorious and advancing German method, which is conquering the world, to him I say, Berlin offers every opportunity, except one, and

that is in anatomy. Aside from this, there are the immense ad vantages offered by the schools of medicine of the Berlin University. I have said Berlin offered poor advantages in anatomy. This disadvantage is very much dependent upon the student coming here; it lies in an insufficient supply of material in proportion to the number of students; but the *Professor* having this branch is an exceedingly accommodating man, and if one does not feel abashed and *will have* what he needs, the old adage will prove true here as well as in other things, "where there is a will there is a way." I, myself, found no want of subjects, but a young American friend of mine here has seriously suffered during the winter for the want of sufficient *energy.* But there is another way to overcome this difficulty at Berlin, and a very agreeable one. Prussia has another school, a small affair, at Hanover, where the number of students is small, and amount of material large. Over this school is Prof. Guenther, whom I sincerely believe to be the best hippotomist living. His anatomy, both demonstrative and topographical, is said by everyone who should know, to be something exceptional. The expenses here would be no more than in Berlin, and the student would have credit for his year's work, and could take the second winter in Berlin in anatomy. Another excellent plan is to take the first three sessions of the French schools, and the last four of that at Berlin; but although this would be allowed, I hardly think it so advantageous or so cheap as to take the German schools first, and then a short visit to those of France, for the experiences of the three-and-a-half or four years in Berlin, would make more manifest and valuable the special superiorities of the French schools. The clinic of the school at Berlin is probably as rich in abundance of material and richer in variety than any in the world, the "Droscke" horse of Berlin having more ills and a greater variety than any animal of his kind it has been my fortune to become acquainted with; a South American or Mexican jackass lives in heaven compared to his unfortunate relation in Berlin.

The term at Berlin will be from October, 1879—3½ years' actual study: the examination will take place during the course of the eighth session, making in reality eight sessions, for one

will naturally attend lectures when not busy with examination. The cost is 100 marks ($25) per year, and includes everything. The Berlin schools offer advantages in physiology, histology, and pathology not equalled by any others. I take it for granted, that in other things except those mentioned, the education is about the same in France and Germany—such as obstetrics, chemistry, physics, zoology, &c. As to admittance at Berlin, or to any other German school, the Direction waives any matriculatory examination for foreigners, assuming no man would take such a venture who was not fitted, as they will not be so liberal about letting one out. It must not be forgotten by the American, that this is a military institution, the rules and regulations of which resemble those of the Medes and Persians, alluded to in the Bible. As to getting out—that is, obtaining a certificate of examination, signed by the German Minister of Agriculture—that will depend entirely upon the student himself, for they do not agree to allow a foreigner an examination unconditionally; the student must show himself worthy, and win the esteem of his teachers by unceasing diligence and manly conduct, and then he will have no difficulty about being recommended to the Minister and obtaining an examination—all will depend upon himself. I have no doubt that admission can be gained to the French schools on like terms, but Mr. Liautard can inform the inquirer better than the writer; one thing is sure, they are the only ones which will allow a graduate of another school to make an examination, without having previously studied a year with them—this is a true international scientific spirit. No person can exist and do good work in France or Germany at less than $700 per year; and it is my opinion, judging from the experiences of an English V. S. who is now studying here, that the expense will come nearer $1,000 per year, and I cannot recommend any one to undertake this experiment who cannot have $4,000 at his command. One thing I dare not pass over, and that is that the temptations of Berlin, to a young and homeless American, are something exceeding anything *any* American city can offer. A student is absolutely encompassed by "Bier und Frauenzimmer," and no parent should allow a son here under 20, unless sure he

had moral backbone, enough, at least, to save his health and understanding. A student must be 18 years old to gain entrance here or in France.

To any one who has read my papers, it will be evident that I am an active opponent to learning the *elements* of chemistry, physics, geology, zoology, and botany, in a school where veterinary medicine is to be studied. There are no words to express the earnestness with which I would implore Americans desiring to take either a French or German course, to fit themselves carefully in these things before coming here, and bringing certificates with them of the grade of knowledge they have attained. I beg such young men to enter such a school as the Lawrence, or other scientific school, and to seriously apply themselves to these things for at least eighteen months: to chemistry, in a laboratory—all other is useless; and as to botany—the genuine elementary botany; that is, the true cellular development of theories and phenomena of plants—with this well learned, animal anatomy in its fine and coarse forms will be but play. He should naturally be thoroughly at home in analytical botany, and also in the classification and characteristics of the animal kingdom. The general principles of comparative anatomy, he will find taught in an exceptionally fine manner in Berlin. It should be self-evident to the American who is going to undertake this venture, how much such a course will spare his health and mind; but to make it fully evident, I will call to his mind the fact that, in his first year, unless he does this, he will not only have to *learn* vocabularies in five different studies, and become at home in their technicalities, but will have to learn *them* also; whereas, by the above course, he has only the language and the words to learn; and, being at home on the subjects, the words would almost come of themselves by hearing the lectures, without any extra study. He can then give his whole force to those essentially professional, and not on himself, upon these side branches.

I must again say, that no one need come here thinking he will get through any easier than a German; and to enable him to do well, I have advised him fitting himself in a way which will more than equalize the difficulties of a foreign language, for I take it

for granted, that no American will undertake this European venture who is devoid of national pride, or who would not desire to do honor to the American name; for those of our countrymen who have studied in other branches here for a length of time, have unexceptionally honored their country. One must see that *our profession* does not fall behind in this matter.

A few words on the books necessary to bring here. Our Government having, in the supreme wisdom of the Solons who constitute it, *placed a premium on ignorance* by placing a high duty on all foreign books liable to contain fresh truth and worth more than one dollar, for the benefit of half a dozen publishers and the injury of every man hungering for knowledge, it is self-evident that one intending studying in England or Europe will spare himself all unnecessary expense. When one reads such laws, he can but reflect, Have these men who made them forgotten how they worked to gain knowledge in their youth? If they have not, then such legislation is not only *heedless* but *headless*. A duty on knowledge! Is there another country so fallen? The "silver craze" is wisdom in comparison thereto. The only book an American need bring with him is "Dunglison's Dictionary of Medical Terms." The only German-English dictionary which is worth using to the student of medicine or chemistry, is Lucas', and costs, elegantly bound, in Germany, $7.00. As an example of the correctness of my assertion, in Germany "Williams' Veterinary Works" cost $7.25, in United States $10.00 per vol.; "Sidney's Book of the Horse," cloth, in the United States $12.50, in Berlin 30 marks ($7.50). Brains are not at discount in Germany, or knowledge taxed, if almost everything else is.

If there is anything which an intending student desires, not mentioned here, the writer will cheerfully answer on application by letter.

KÖNGLICHE THIERARZINEE SCHULE,
Berlin, April 13, 1878.

EPIZOOTIC PLEURO-PNEUMONIA.

In Mr. Michener's article in this month's REVIEW, on the above-named disease, occur the following statements:

"I say seems to be restored; for in almost every case of this kind we find, on a careful examination, more or less diseased condition of the lungs, which is present in a latent form, but only waits the proper stimulus to make it the nucleus of a contagion which may infect whole neighborhoods and bring about all the terrible calamities resultant on such outbreaks." And "Cattle once infected should not be kept for any purpose, but if kept should remain apart from all others until fat enough to kill, and be disposed of in this manner."

Now, in the first place, to what does he refer as being pres en in a latent form, and what would he consider a proper stimulus to make such a subject the nucleus of contagion? And secondly, why does he recommend that cattle once affected should not be kept for any purpose, but if kept why so isolated from other cattle?

His experience may enable him to explain these points to the edification of other members of the profession, as well as to

Yours, respectfully,

L. McLean, V.S.

Brooklyn, June 18, 1878.

REPORT OF CASE.

REMOVAL OF THE LEFT INFERIOR MAXILLA.

By C. D. Smead, V.S., Logan, N. Y.

Read before the Rochester Veterinary Medical Association.

I send you a report of a case that I operated upon by way of experiment, which proved a success, although at the time I had but little or no hope of its terminating so well, and I will say, at the beginning, that I claim but little credit, as the operation was quite simple; and I attribute my success wholly to nature's power of reproduction of bone. On the 22d of July, 1877, I was called to the farm of Peter Swartout, in Lodi, Seneca Co., to see a colt about four months of age. I found the tongue of the

animal very much swollen and protruding from the left side of the mouth. The owner said that the first he noticed wrong, was about three weeks previous, when a considerable swelling appeared on the left cheek; but the swelling nearly all went away in a few days, and he thought him doing well until four or five days, when he discovered that he had great difficulty in nursing from the mare and a very unpleasant odor in his breath.

After casting and securing the colt, I proceeded to examine the mouth, first pushing the tongue back into the other side of the mouth, as he had but little use of it from its swollen and ulcerated condition. I passed my fingers into the mouth, and was somewhat surprised to find the corner nipper of the left inferior maxillary very loose; in fact, so loose that I picked it out with my fingers. I also discovered that the first and second molars were loose, and I also picked those out with my fingers. In passing my fingers into their cavities, I found the maxillary itself in a state of necrosis, and the tissues covering the bone in a putrid condition.

I told the owner that I could give him but little encouragement, but would remove the diseased portion of bone if he wished me to, and see what it would do. As the colt was a high bred one, and very valuable if cured, the owner wished his life saved if possible, even if he was left deformed. I then proceeded to remove that portion of the maxilla from the second nipper to the third molar, which I found perfectly necrossed and had to be removed in small pieces. I then supposed that I had all of the diseased bone removed, and thought that I would break off with the forceps some of the sharp joints of sound bone that would be likely to cause irritation. In doing this, I shortly discovered that the whole left inferior maxilla was detached from its periostium, and also from its ligamentous attachments to the superior maxilla. I continued to work carefully, cutting but very little, as the tissues were in such a putrid condition that the pieces of bone would easily tear through them, until I removed the whole left maxilla, the last piece being about as large as a man's hand. I carefully washed out the blood and decayed tissue, and dressed with acidum carbol one part, water fifty parts, and ordered the

mouth washed twice daily with the same until I saw him again; also that the mare should be milked, and the milk and a small quantity of gruel be poured down the colt several times per day.

One week after, I saw him, and found he had nearly recovered the use of the tongue, and the ulcers healing rapidly. He was then allowed to nurse the mare and would drink gruel from a pail. I ordered sponging of the mouth as before, but used a weaker solution. I did not see him again for four weeks, when, to my surprise, I found that nature had commenced to create a new jawbone; and in two months nature had fully accomplished her work, and a new jawbone was fully formed, but a little thicker than the other, but no teeth have yet appeared. The colt is in fine condition, and able to eat hay and grain as well as any colt. No one, from his external appearance, would notice the difference in his maxillaries.

As to the cause, I am unable to say, but I am of the opinion that there had been a comminuted fracture of the jaw, and necrosis had been the result. Allowing that to be the case, would it not be better, in case a young and valuable animal should by accident badly fracture the jaw, to carefully remove all of the splinters and detached bone, and let nature have a chance rather than to order the animal destroyed?

Respectfully yours,

C. D. Smead, V.S.

Logan, N. Y., April 12th, 1878.

J. C. McKenzie, Esq.,

Dear Sir :—Yours of April 8th has just arrived, asking for a more definite account of the removal of the maxilla which I reported to your Association. (As to the amount of bone that I removed, I think that I stated that I removed the whole of the left inferior maxilla, from the second nipper back to its articulation with the glenoid fossa of the squamous temporal; or, in short, the whole of the left inferior maxilla bone, including one nipper and all the molars upon that side). I think I can see, from the tenor of your letter, a disposition to doubt the truth of

my report, and do not wonder at it, for I consider it a remarkable work of nature; and although I was advised to report it by physicians, I have always objected, for the reason that I knew that some would think it untrue. A few months ago I reported it to Prof. Law, of Cornell University, for the benefit of his students. He complimented and thanked me for it, also stating that he had known of similar cases of reproduction in other parts, where the periosteum was not destroyed. (Now I again repeat, that I removed at the time and place that I stated in my report to you, the whole of the left inferior maxilla, from the second nipper back to its joint, and if further proof is requested, I will furnish the affidavit of the owner, Mr. Peter Swartout, of the town of Lodi, Seneca County, New York, and several others who saw it; also, if your Association wish to bear the expense, I will send the horse for your inspection.) I have only one correction to make in my previous report. That is in regard to the teeth. I think I stated that no teeth had appeared, but I saw the animal on the 10th of this month (who by the way is now owned by Robert Faucett, of Lodi, N. Y.) and he has three malformed molar teeth upon that jaw.

Respectfully yours,

C. D. Smead, V.S.

CORRECTION.

Through inexplicable typographical errors, the article on the Etiology of Spavin, by our correspondent, Wm. Bryden, V.S., has been much disfigured in our June number, and we take this opportunity to correct it.

Page 107, lines 5 and 11. "The causes of the new-born formation," should read, "new bone formation." Line 23 and 33, "a recently sprained," and "recently strained," should be "recently spavined"; and line 34 "when detected," should read, "when detached."

American Veterinary Review,

AUGUST, 1878.

ORIGINAL ARTICLES.

A CONTRIBUTION

TO THE PATHOLOGY AND ÆTIOLOGY OF HUMAN AND ANIMAL VARIOLÆ.

Translated by F. S. BILLINGS.

(*Continued from page* 146.)

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The complications to which v. vaccina is liable are rather numerous. The normal development of the variolæ is very frequently interrupted by milking, by the animal itself in lying down, by licking the parts in question, by the contact of the complicated udder with the animal refuse on the stable floor, and by the latter itself; the variolæ are disturbed, suppurating ulcers become developed, hæmorrhages are frequently present; the development of eschars is retarded, and sometimes long continued profoundly irritating ulcerations are present upon the teats. Aside from this the grade of local inflammation upon the udder or teats, as well as the sensitiveness by milking, is chiefly conditioned by the number of pustules.

As to the *general phenomena anticipating* and *accompanying v. vaccinæ*, we find little constancy in the same; while in many cases the general condition of the animals remain undisturbed, and aside from the pain upon the udder, they do not seem to suffer any; by others the disease begins with a slight disturbance, salivation from the mouth, rumination with empty mouth, want of appetite, quantitative decrease of the milk, and light fever phenomena; occasionally we may observe marked feverish phenomena, and a violent painful reaction by touching the udder; the teats then offer a wounded and suppurative surface. With a thinner milk, we also observe a quantitative decrease of this secretion. The last finds a partial explanation at least, in the difficulty we meet with in stripping such cows on account of the pain united with the operation.

When we follow the progress of the disease in a herd, we observe that the same extends from one cow gradually over the other members of the herd, and that, as a rule, but few individuals remain immune from the disease processes. The extension takes place as by fixed contagii, in part through interposition of the straw, or flooring of the stable; in the greater number of cases, however, through the hands of the milkers. As a rule milk cows alone become diseased, not the young animals and bulls which may be in an infested stable. The fixed nature of the contagion is sufficient to explain the slow extension of the disease over the members of a given herd; the disease in large herds frequently continues for six months or over.

It will be our task yet to consider the category in which to place the dangerous exanthema which prevailed by cattle in the last century, which extended over the whole body, and was looked upon as a form of variolæ—Ramazzini. In reality it appears as if a general form of variolæ does occasionally appear by cattle. This very seldom form of variolæ vaccinæ was observed by Kullrich in the spring of 1862, by calves in Upper Schlesia; the animals present catarrhalic phenomena, nodes were diagnosticable in the cutis, especially upon the median surface of the extremities, the genitals and udder; variolæ were apparent on the scrotum of a young bull. The nodes were hyperamic, varying in

size from that of a pea to a ten cent piece, more or less thickly together upon the places in question, isolated upon other parts of the cutis; upon the neck of the animals circumscribed eczemata were observable. The nodes transformed in a few days to brownish eschars, which left behind them deep cicatrices. The ætiological momenta remains unknown. The lymph from two undeveloped nodes was collected and sent to the inoculation station in Berlin. Inoculatory experiments with the same on several cattle gave negative results. By only one of the cattle in question there developed in course of time an isolated variola, which, on being reinoculated through several generations, lead to the development of normal variolæ. Variolæ have been noticed upon the nose of a sucking calf, the mother of which was diseased with vaccina.

As already mentioned, the diagnosis of variolæ vaccinæ is sometimes accompanied by certain difficulties, a circumstance which is grounded in the unfrequency of the processes, as well as in their sporadic appearance. I will not here enter into an intimate discussion of the so-called variola vaccina spuria, the accuminated, indurated, and varicella-like variolæ—which are often mistaken for the true eruption. We also find variolæ-like exanthemata upon the udder of the cow by some infectious disease. By apthæ epizooticæ are frequently met with variolæ-like noduli and nodi, which are gradually transformed into pustulæ and large confluent bullæ. The contents is fluid, and generally of an intense yellow color. According to Reiter, inoculation with the same gave negative results, while in other cases positive results are said to have been attained.

By the nasal-diphtheria of cattle we also find a herpes-like exanthema upon the udder, which can however, scarcely be complicated with variola.

As a severe form of variolæ which extended over the entire body of the diseased cattle, and which was directly compared with v. humana, a disease was described in the last century, which appeared in Lombardy, in Holland, Holstein, and in a very malignant form in England (Layard), and occasioned great devastation. A similar malignant form of variolæ is said to have prevailed in East India in the fourth decennium of the present cen-

tury.—(Kussmaul Bohn.) Authors have previously considered this disease to be a true variola; or, also apthæ epizooticæ.—Hering. I do not for a moment doubt that this nominal variolæ was anything other than rinderpest, especially as several distinguished investigators of the present day—Murchison and Sanderson—have from their own studies of this disease been led to the conclusion that the rinderpest stands in very close (characteristic 13 ?) relationship with variola humana vera. (See 3d Report of Eng. Commissioners on Cattle Plague, 1866.) For the differential diagnosis of variola vaccina vera, the accidental transmission to man frequently offers a very safe indicator, and this property is essentially valuable, because the diagnosis is frequently rendered difficult by the already mentioned typical course of v. vaccina, the same having been frequently enough taken for varicella-like, or emphyzematous variolæ. When milkers have insignificant injuries upon their fingers, they offer very favorable subjects for accidental inoculation ; the seat of the variola is generally the end joint of the finger, the hands, the arms, much less frequently upon other parts, as the feet, the nasal extremity.

Before we turn ourselves to the consideration of the genesis of v. vaccina it seems appropriate for us to briefly consider the local and periodical appearance of variolæ, as well as the relations of the dispositional sexual relations of cattle to v. vaccina. The infrequency with which v. vaccina comes to observation may be drawn from our previous remarks. According to Hering, in Wuerttemberg, in the course of ten years—1827–1837—eighty-four cases of v. vaccina vera were recorded—with successful transmission to man,—and beside that 208 cases which were probably the true disease, by which the transmission to man in part proved negative, and in part was not attempted ; an average of thirty cases per year. In 1873 there were indicated in Wuerttenberg 39 cases, in 1874, 28 cases of v. vaccina. There is no reason to doubt that the disease is as frequent an occurrence in other parts. The only way to acquire an accurate statistical knowledge of such diseases is to call the attention, and make it the duty of every veterinarian and breeder to report such cases, and to excite the latter to more earnestness in such matters by

rewarding them in every case where the information proves on inspection to be correct.

With regard to the period (season) in which the eruption most frequently takes place, the observation of Jenner's that variolæ vaccina comes to pass most frequently in spring and early summer, has been completely confirmed by Reiters and Hering; although no season of the year is entirely free from the same. Authors have sought to explain this in many ways, for instance: by assuming a certain inclination to prevail at such times to critical eruptions; that at this time the change from dry to green food takes place, and that the cause or a collateral cause to the eruption of variola must be sought in the increased flow of fluids to the udder, as well as in the increased lactation.

That an individual or better sexual disposition took part in the pathogenesis of the disease, was concluded, from the fact, that the disease is almost exclusively limited to cows, and, indeed, especially during the period of lactation, that $\frac{2}{3}$ of the complicated cows were found to be in the primary stages of milking, while the other $\frac{1}{3}$ were old milkers. When the disease is found by non-milking heifers, a very seldom occurrence, we are in general able to prove, that a short time previously other animals—milk-cows—had been diseased with variola in the stable in question; that the disease can only take place by infection. The case is the same when variolæ are observed by young animals, and by bulls (upon the scrotum) when the disease is prevailing in a large stable; in both cases it is not the hand of the milkers, but in all probability the straw has been the intermediator or vehicle of the contagium.

What is then the genesis of variola vaccina?

When I again reopen this frequently ventilated and as frequently unanswered question, it is with the hope of presenting some new points to the consideration of observers, which have to this time received but little attention, and which are yet of importance in investigating for the origin of the bovine variola.

When a so manifestly contagious disease as variola vaccina appears so seldom, and then only in a sporadic form, and as suddenly disappears, it is certainly natural that we should desire to

become very intimately acquainted with the ætiological momenta at the bottom of such peculiar conditions, unless we will place ourselves upon the very comfortable (for lazy men (B)) and previously much advocated stand-point of so-called original development, abiogenesis, (without infection), which according to the present views over the nature of contagii appears only suitable for the advocates of generatio æquivoca; or we must adopt the very improbable view, that the contagium of v. vaccina, which as known possesses an intense degree of tenacity in a desiccated condition, may remain latent for years in a stable, and now and again give occasion to an eruption of the disease. I gladly concede that there are certain infections and inoculable diseases, which appear in a sporodic form, as for instance: Diphtheria, infectious wound fever, puerperal fever; but for different reasons it seems unjustifiable to place v. vaccina in this category.

A nearer genesis for v. vaccina may under these conditions be sought. The variolæ which come to pass by man and other animals, especially since the affinitative relations (" verwandt-schaflichen Beziehungen") of the variolæ to one another, has been repeatedly confirmed by means of clinical and experimental experience. The only variolæ forms which come into consideration in considering the genesis of the bovine variety are: Variola ovina, v. humana vera, and the variolated variola of man—humanised vaccine—for I believe I have sufficiently demonstrated that all the remaining so seldom occurring forms of variola—equina, caprina, canina and porcina—proceed from other primary forms, and cannot be looked upon as idiopathic forms. As known, Jenner credited the equine form as being the generator of v. vaccina, but we have, we think, sufficiently proven the incorrectness of this view, as by us, in Germany, v. equina is scarcely ever seen, and aside from this, v. vaccina is regularly seen to develop in stables, where no horses are kept.

The descent of v. vaccina from v. ovina is as improbable as from v. equina. We justify this conclusion from the fact that there are no reports in the literature of such a direct connection, although from the much greater frequency of the ovine variola, opportunity sufficient is given to the infection of cows from the

same. Aside from the circumstance that sheep can be successfully inoculated with vaccine, and that the ovine organismus possesses the peculiarity, that it frequently generalises the vaccine, there is no nearer relationship between v. ovina and v. vaccina. The vaccinated disease of sheep is not identical with variola ovina; were it so, there must necessarily take place accidental transmissions of v. ovina to cattle of every sex and age, which is in fact not the case.

The only remaining forms of variola, in which we may seek the genesis of the bovine variety, are variola humana vera and the artificial (variolated) protective variola of man; so that I feel myself justified in formulating the following axiom, to which we have arrived per exclusion.

The origin of the so-called " original " or true bovine variola, variola vaccina—can only lie in the human vaccina or variola.

That variola humana vera inoculated upon cows is able to generate variola vaccina, is proven by the experiments of Gasner, Sunderland, Theile, Ceely, Badcock, and others, to which I must more intimately refer on account of their fundamental importance.

According to the data given by Bohn, ("Handbuch der vaccination," Leipzig, 1875), the first experiment of this kind was made by Gassner, in 1807, in Guenzburg, who inoculated several cows with variola from children, and received positive results, that is, by eleven cows, variola vaccina developed, and from the last he vaccinated four children, and received very fine inoculatory pustulæ.

The greatest credit in this question belongs undoubtedly to Thiele in Karan, 1836, and the Englishman Ceely, 1838. They inoculated cows with the lymph from human variola upon the udder and vulva, and received thereby true variola vaccina, localized upon the place of inoculation. In no case did there develop a general exanthema by the inoculated cows.

The so generated artificial variola vaccine, or better-vaccin ated variola, deports itself by further inoculation in exactly the same manner as the so-called original cow or vaccine lymph. The pustule has the greatest virulence from the sixth to tenth day, and ex-

erts the same action when inoculated upon children as the common vaccine, only that the development of the inoculatory pustules is more intensive in the first generations. Thiele was able to pass his new inoculative material through seventy-five human generations, and to transmit the same to more than three thousand persons. The protective power of this variola vaccine was confirmed by testing inoculations with the true contagium of variola in twenty-one cases. Ceely obtained like results with variola vaccine, he and other English doctors proving it through more than sixty generations, by which it still retained its general characteristics; the protective power of the same was tested by numerous inoculations with variola-pus. Variola vaccine, therefore, corresponds with the genuine cow lymph; inoculation with it protects man from attacks of human variola.

Badcock received positive results from inoculating a cow on the udder with variola; from eight cows vaccinated with variola he received positive results by three, and from the latter he made numerous inoculations, and proved this vaccine also to be a prophylacticum against human variola. Six further inoculations of cows with variola lymph proved negative, from which we see with what difficulty the contagium of human variola infects cattle, and vice versa. Senfft has lately received positive results from his experimental inoculations of calves with variola-pus; he received local vaccine pustules without any indications of general disturbance or general exanthema. The further inoculations of a calf gave positive results; the animals were found non-susceptible to further vaccination.

From these experiments we see that it is possible to develop *variola vaccina from variola humana vera*, and that our above mentioned conclusion, *that the bovine variola descends from the true variola of man, is based upon facts.* The bovine organismus has the ability at the same time to reduce the contagious element of variola humana, and to transform the same to a benevolent vaccine contagium. This faculty is exactly opposed to that of sheep, by which we have seen that under certain circumstances, the contagium of vaccine became generalized, and assumed a malignant form. In this case it appears as if the variola vaccine in-

passing through the ovine organismus again assumed its original properties—that is those of the contagium of v. humana vera.

We are not without reports of negative results, which stand opposed to those we have just considered. Reiter received only negative results from his variola inoculations upon cattle. A commission in Lyons, composed of Chauveau, Viennois and Meynet, 1865, basing themselves upon the results of their experiments, that the organismus of cattle is incapable of transforming the variola of man into vaccine, but that the same produces again only bovine variola, which presents itself as a simple pustulous eruption. A similar result was obtained by a Turin commission 1871–'74, viz: Human variola is not to be transmitted to cattle.

As by all such questions, negative results cannot do away with a large succession of positive experiments, and it is undoubtedly necessary that many circumstances must happily unite in order to produce positive results. As Bohn says, it is as essentially dependant upon the manner of inoculation as upon the animals selected. How else shall we explain the positive results obtained by Senfft with his calves? An analogy to the same is in a certain way offered by the retro-vaccination of man. While many observers assert that they have met with great assistance on the part of the human organism against retro-vaccination, other experienced experimenters, as Reiter, Kranz and others, have almost always received positive results.

We can happily strengthen our conclusions, and the above noticed positive results which go to prove the causal-nexus between v. humana and v. vaccina, by carefully observed and recorded proofs of the accidental (not experimental) transmission of the human form of variola to the bovine organismus.

Ceely, the exact and trustworthy English observer relates in his book with almost painful exactness the following case: In the vale of Aylesbury the cows of a stable had opportunity to smell and lick the bedding of a person who had died of variola, which was spread out to air on the grass of a meadow. The cows grazed in this place and in the course of twelve or fourteen days, variola vaccina broke out by five of them, almost at the same time, and this was accidentally transmitted to them, the owner and milker

of the cows, and from the last, children were successfully inoculated through several generations. At the same time variola vaccine did not prevail among the remaining cattle of the valley. That no complication was in this case made with the exanthema of aphthæ epizooticæ is proven by the fact that the cows were subsequently attacked by the latter disease. Other very interesting and thoroughly confirmed cases of positive infection are reported by Ceely in his very interesting work, "Observation over Cow Pock," (variola vaccina) and Vaccination, etc." Dinter made similar observations in Saxony in 1860; and in the Prussian Veterinary Report, 1855–'65, the same phenomena are mentioned, viz: the coeval appearance of humana and bovine variola. In Holstein, epizootics of vaccina and variola epidemics have been repeatedly observed.

We observe, therefore, that human variola may be transformed into vaccina through both artificial and accidental transmission, and have in this way secured a safe indicator in our search for the origin of variola vaccina. V. vaccina generated in this manner distinguishes itself in no way from the so-called pure or original bovine variola, and deports itself in exactly the same manner as well with regard to further inoculations of cattle and man, as with regard to the activity of the inoculating lymph, and its protective power. As, however, variola vaccine comes to pass in all directions, although in a sporadic form, either by individuals, or enzootic, limited to stables or herds, it must be evident that it is impossible, that it should in all cases owe its (direct) genesis to human variola. The latter coincides with v. vaccina only in exceptional cases, and generally fails far and near in regions and times when v. vaccina breaks out, a point Bohn especially emphasises.

We must yet seek for still other springs from which this bovine malady takes it origin, as we cannot on any account concede to it an abiogenetic origin. Although individual authors have asserted that the fact, that this bovine malady comes to pass in places where neither humana or equine variola were to be found, speaks strongly for its epigenetic origin, yet they entirely overlook the fact that *vaccination is practiced on all sides.* As

we have been unable to consider the remaining animal forms of variola as the genetic points of v. vaccina, there remains to us yet the humanized vaccine as the most dispensed—extended—of all the forms of variolic contagium, which is introduced by the inoculating doctor, in an artificial manner, in almost every house in the land, (Germany). *We have to seek in humanized vaccine the spring from which the greater number of cases of bovine variola take their origin.*

In order to prove this assertion, I must briefly consider the subject of *Retro-vaccination*, in which I follow the previously alluded to work of Bohn.

Sacco was the first to employ retro-vaccination, that is, the inoculation of humanized vaccine upon cattle, for the purpose of having on hand a supply of fresh lymph. The subject attained a great extension, in the twentieth and thirtieth decenniums of this century, in order to freshen and reinvigorate the lymph, which had become weakened by passing through more or less human generations, by introducing it into its original place of development, the bovine organismus.

(*To be continued.*)

ANATOMY OF REGIONS.

Translated from Peuch and Toussaint, Precis de Chirurgie Veterinaire, by A. Liautard, M.D., V.S.

CONTINUED FROM PAGE 151.

ORBITAL REGION AND OCULAR APPARATUS.

Situated on the boundaries of the anterior and lateral faces of the head, the orbital region presents to study superficial parts and deep organs. The former or protecting parts of the eye are the eyebrows, the eye lids and the membrana nictitans. The

deep organs are the globe of the eye, the lacrymal apparatus, the muscles moving the globe, blood vessels and nerves; all enclosed in the ocular sheath, a kind of envelope which isolates them from the surrounding parts.

SUPRACILIARY REGION.

It has for base, inwardly, the orbital process of the frontal, outwardly the apex of the zygomatic process of the temporal and the superior extremity of the mœlar bone resting on the temporal. It is limited above by the hollows of the eye* below by the superior eyelid, inside by the frontal region, outside it extends to the masseterine region. It is therefore elongated sideways, slightly convex from above below, and curved in its great axis.

The skin of that region is somewhat thick, and is covered with hairs, early in fœtal life; these are uniform and short, mixed up with some long and strong ones. Under the skin we find 1° the superior fibres of the orbicularis palpebrum, very adhering to the skin and under, immediately on the bone, a connective tissue somewhat abundant and easily infiltrated.

We find also the orbital process of the frontal turned outward, downward and a little backward, about one centimeter thick behind, sharp forward, and perforated at the base by the ciliary foramen, which gives passage to the nerve and artery of the same name; it rests upon the extremity of the temporal. The orbital process covers the lacrymal gland and the globe of the eye. The blood vessels are small; they come from the ophthalmic artery, and go to the angular vein. Sensitive nerves come from the fifth pair.

Differences—That region in carnivorous and in pigs has, properly speaking, no bony frame; the orbital process of the frontal not resting on the zygomatic process. In its place is found a fibrous cord on which the ocular sheath is attached.

PALPEBRAL REGION.

The eyelids are membranous sheaths placed in front of the ocular globe, which they partly or entirely cover, whether open or closed. It is not easy to define closely the eyelids, as they

*Salière.

are continued without well marked separation, the superior with the orbital region, the inferior with the cheek and chanfrein. We may, however, say that their approximate boundaries is the sharp edge of the orbite. They are two in number, one superior, one inferior, united at their extremities to form the commissures or angles of the eye, one internal obtus the great or nasal angle; one external small or temporal angle. They differ from each other in their external forms. The superior is convex from side to side, and from above below; it has a free, thin, sharp border, upon which are found implanted long, stiff hairs, turned outward and downward. These eye lashes are found on the middle of the free border; they are missing in the internal third and the external fifth. In the middle they are quite long.

When the eye is open the free border of the eyelid describes a curve in its two external thirds, and a straight line in the internal third—a more marked curve unite these on a line with the internal and two external thirds.

The anterior surface offers two well marked fissures, parallel to the free border; one is about one millimeter to one millimeter and one half from the border, the other about three millimeters higher than the other. The eyelid is separated from the eye brow by a deep fissure running along the superior orbital arch, below which it is situated. When the eyelids are closed the three fissures disappear, and then one has a convex, uniform sur face, while the curves of the free border disappear and form a transvenal fissure almost straight.

Above the internal third of the eyelid one finds a flat surface, irregularly triangular in form, which sometimes presents the continuation of the external part, but which offers oftener a flat surface as a consequence of the contraction of the muscular fasciculus which stretches the skin of that part of the region. The internal face is smooth and concave, to adapt itself exactly to the convexity of the globe of the eye. It is lined by the con jonctiva which, folding back over the eye, forms the superior and inferior oculo-palpebral fissure.

The inferior eye lid is better limited; regularly convex an

more prominent; its free border is almost concave; its most internal part only is straight and goes to meet the extremity of the superior border to form the obtuse angle of the eye. The eye lashes of the lower lid are few and shorter than those of the superior one.

In the thickness of the skin, besides long and stiff hairs are found tentacules analogous to those of the lips and chin.

The external or temporal angle, or external commissure, unites by a short curve the free borders of the eyelids. Outside, the inferior lid seems to be covered by the superior, and thus the angle seems more acute than it really is; a fissure running outward separates the two lids quite plainly.

The internal or nasal angle, or internal commissure is rounded and lodges a peculiar organ, black in color, or marbled with white, of the size and convexity of a pea; this is the carmculau lacrymalis, On a deeper plan one sees also the extremity of the free border of the membrana nictitans or third eyelid.

The straight fissure which indicates the limit of the closed eyelids extends about one centimeter beyond the nasal angle of the eye, by a fold of skin detected only when the eye is closed.

Going from superficial to deep parts, the eyelids are made of: 1°—the external skin; 2°—a sphincter muscle; 3°—a fibrous frame, carrying on its free border; 4°—a cartilage containing peculiar glands; 5°—a layer of loose and abundant connective tissue; 6°—the tendinous expansion of the elevator of the upper lid proper; 7°—the internal tegument or conjunctiva; 8°—blood vessels and nerves.

1°. The skin of the eyelid is very thin, and covered with very short and fine hairs. Long, stiff hairs, analogous to those of the lips and chin, are found on them, and specially on the inferior one. Near the free border, principally on the inferior and internal third of the upper lid and in the commissures, the hairs are absent and the eyelid assumes a shying dark tint in animals whose skin is pigmented. The skin is very adherent to the sphincter, and much care is required to isolate it, so thin is the layer of connective tissue underneath—it seems even to be absent

and shows itself slightly only in cases of general infiltration of the eyelids.

2°. The orbicularis palpebrum is very thin. It lays on the fibrous frame. Its fibres overlap the lids and are attached upon the bones forming the orbits. As point of origin of their fibres, we may consider a small tendon extending from the lacrymal tubercle at the nasal angle of the eye, and from this point the fibres surround the eyelids in assuming a direction parallel to the free border. They are continued in each one at the external commissure of the eye. A small muscular fasciculus, the fronto superciliary muscle, attached on the frontal bone, runs obliquely outwards and downwards to implant itself upon the superior fibres of the sphincter, near the nasal angle. In contracting, it uncovers this angle and increases the concavity of the upper lid.

3°. Under the orbicularis is found a layer of quite loose cellular tissue, separating it from the fibrous frame.

This last, more marked on the superior lid than on the inferior, is attached by its adherent border to the edges of the orbit, and is continual with the periosteum and the occular sheath. Its free border supports the tarsus (cartilage) on a level with the commissures. The fibrous layer becomes so thick and strong that Winslow has named it the ligament of the tarsi, a name which it deserves to some extent.

4°. The tarsi form to the lids a cartilaginous frame representing elongated pieces about nine millimeters wide. The superior tarsus is stronger than the inferior, which is almost straight, while the former is much convex. The internal face of the cartilages is hollowed with small grooves, perpendicular to the free border of the lids, in which the glands of emibonius are received. These are small glands in groupes, which secrete a peculiar onctuous humour, always rare in ordinary circumstance, but whose quantity increases considerably in inflamed conditions of the conjunctiva and in serious morbid states, as in enteritis, for instance.

5°. We had made a special layer of the loose connective tissue which unites the fibrous layer of the tendons of the elevator proper of the inferior lid, as in cases of serous infiltration, after external blows, this tissue assumes a great importance. Scarcely

noticeable in healthy conditions, it becomes, in some cases, and in a few hours, the seat of considerable serous effusion, for both lids, at such a degree that, not only the animal cannot raise them, but even the fingers of the observer failed to separate them. It is, then, in the layer of this connective tissue, that this infiltration exists, the sphincter muscle being included in it also. Often this layer is thicker, double, even treble of its normal size, and the infiltration extends to the superciliary region. The same takes place for the sub cutaneous layer, but it is immediately on the conjunctiva that the infiltration takes place, which is easily detected by the color of the mucous membrane.

6°. Under the fibrous layer, the cartilages and the connective tissue, we find at the upper lid only the tendons of the elevator proper. This is nothing but a thin aponeurosis extending in the whole width of the lid, and attached to the adherent border of the tarsus cartilage.

7°. And when all these layers are removed, we have exposed the portions of the ocular mucous called palpebral conjunctiva, of which we will speak hereafter.

8°. *Blood vessels and nerves.* The arteries going to the lids are numerous but small. The ophthalmic artery furnishes the superciliary which runs through the supra orbital foramen and ramifies specially in the upper lid, and the lacrymal artery carrying the blood to the gland of the same name, its ramifications going to the upper lid also. The orbital branch of the superior dental artery gives divisions to the inferior lid, lacrymal apparatus, and membrana nictitans. The inferior lid receives also divisions of the superior terminal branch of the glosso facial.

Veins go to the angular of the eye, superior origin of the glosso-facial, and to the alveolar as it passes in the ocular sheath.

Nerves rise from two sources, the sensitive branches from the ophthalmic branch of the fifth pair; the motor branches from the seventh pair through the intermedium of the anterior auricular nerve.

The paralysis of the fifth pair removes the sensibility and the voluntary motions of the lids, but the reflex motions called wink-

lings remain. In the paralysis of the seventh pair, all motions are removed, but the sensibility remains.

[*To be Continued.*]

EDITORIAL.

UNITED STATES VETERINARY MEDICAL ASSOCIATION.

In a few weeks the anniversary and annual meeting of the United States Veterinary Medical Association will take place at its ordinary place of meeting, the American Veterinary College, in New York city.

This is an occasion always looked for by the numerous members of the Association, and though the gentlemen who belong to it are pretty well scattered all over the country, they always manage to be present, and to arrange their business so as to come and meet some friends and colleagues; others, friends, colleagues and alumni of the same school.

As the number of members has been yearly increasing, especially for the past few years, the next meeting will in all probability prove one of the largest gatherings of veterinarians on this continent, even larger than the one which took place two years ago in Philadelphia, on the occasion of the centennial festivals.

It is to be hoped, however, that the transactions which will take place at that meeting will be sufficiently interesting to repay for their trouble those who have to come a long journey to attend it, and that the officers of the Association have succeeded in obtaining from members interesting papers to be read and discussed on that occasion.

By a resolution passed some time ago, two prizes are offered for the best papers on subjects pertaining to veterinary medicine. This ought to be well-known by the members, and ought to be a stimulus for many of them. The Association counts a number of young men recently graduated, and they ought not to remain satisfied with their graduation and take a back seat, thus resting

on their laurels; no, they ought to be the most anxious candidates for these prizes, and though we hear that, so far, only one paper is to be presented, we hope others will be sent in to be read, discussed, and rewarded according to their merits at this next session.

But not only that, we have a number of committees whose reports will prove, no doubt, of much interest, and certainly, amongst them, the Committee on Diseases will have ample materials to keep the members together and sufficiently interested to forget the time of parting.

If, besides, we bear in mind that the occasion will be the second birthday of the AMERICAN VETERINARY REVIEW—born from the Association at one of its meetings—considering the success which has crowned this representant of our professional interest, we cannot help thinking that this meeting will prove to the American veterinarian a regular holiday, and that most of the members will feel it their duty to answer the roll call.

EXTRACTS FROM FOREIGN JOURNALS.

BY A. LIAUTARD, M.D., V.S.

HERNIA OF THE UTERUS IN A SLUT.

A mongrel slut, seven years old, had a litter of six or seven puppies in 1876, after what she exhibited a tumor at the posterior part of the left mamanæ, round, and of the size of a hen's egg. The following year she was covered, and shortly afterwards this tumor began to enlarge. Her abdomen had also increased; she was pregnant, and soon gave birth, through the natural passages, to a well-made dog, which lived only four days. As the tumor had increased, was more depressible and fluctuating, medical advice was asked. At first the whole trouble was supposed to be only a mammary tumor, but after another examination it was found that the tumor had ulcerated, and that through it a greyish puss was escaping. At the same time a small paw having protruded through the opening, the slut had torn it and pulled it off. Then the ulcer of the skin had the size of a pencil,

its borders were inflamed, the hairs all round were covered with a sanious offensive discharge; a certain amount of discharge passed through the vulva. The abcess was freely open, and a dead fœtus was removed perfectly intact. No trace of the fœtus from which the paw had been torn could be found. At the examination postponed to the next day, a communication between the uterus and the external abcess was detected, and after forty-eight hours of treatment the slut died. Post-mortem revealed extensive peritonitis with effusion, hernia of the horns of the uterus through an opening situated on a level with the posterior part of the left mammæ opening, which on account of the condition of the parts could not be well ascertained as the inguinal ring or not. The ureters are drawn down by the uterus and form a web with convexity turned downward before reaching the bladder. The horns of the uterus are gangrenous and putrified, a part of the body of the uterus is engaged in the cavity of the abcess, and seems to be the seat of a stricture quite well marked on a level with the superior plan of the abdominal wall. The internal surface of the uterus or vagina is inflamed and blackish. There is also a complete rupture of the uterus, involving three coats, and whose aspect shows it to be of recent date. The pouch containing the protruding organ has an aufractuous, granulating surface in which float pieces of surrounding tissues; frequently it presents adipose masses surrounding the uterus.—(*Archives Vet.*)

BRONCHOCELE IN A DOG.

The application of sub-cutaneous injections, as promoted by Dr. Luton, have given, in this case, excellent results.

A dog five months old had near the middle of neck a tumor of the size of a small apple, more prominent when the animal raised its head; it is bilobulated, painless, not warm, soft and non-fluctuating. Each lobe is ovoid in form, not adherent to surrounding tissues, and rolls easily under the skin. Each one is lodged near the larynx, on the side of the trachea, and inferiorily seem they united by a thin band.

An injection of tincture of iodine (one gramme) was made

upon each lobe, penetrating in the substance of the tumor—the next day quite large ædemœ, not very painful, which disappeared after four days.

Some three months after the tumor had somewhat diminished and is more indurated. Another injection only in the sub-cutaneous cellular tissue is made on a level with the thyroid bodies Ædemœ larger than at first, more painful, which toward the sixth day has the character of an abcess. This, however, is gradually resorbed, and with this the tumor diminishes little by little and soon disappears.—(*Arch. Vet.*)

NEW TREATMENT OF TETANUS.

W. Durocq reports two cases of traumatic lockjaw, which he treated successfully with spirits of turpentine. After several unsatisfactory attempts he composed the following drench : Spirits turpentine, one litre ; camphor, twenty grammes ; eggs, eight.

In a first case, a filly of three years, affected for three days, wasplaced in a dark and quiet stall and received half of the above mixture, which was renewed the next day. In a second case a gelding of three years, sick eight days, received the same treatment, one dose of the drench for two days, and was also placed in a dark, quiet box stall. Both patients recovered. Shortly after the administration of the mixture both animals were taken with great excitement, followed by profuse perspiration and slight coma, to which succeeded an abundant diuresis, and complete liberty of the bowels. In both cases the convalesence lasted two months.—(*Arch. Vet.*)

REPORTS OF CASES.

FRACTURE OF THE SMALL EXTERNAL METATARSAL BONE—SYNOVITIS—DEATH.

By A. H. Rose, D.V.S., House Surgeon to American Veterinary College Hospital.

On May the 19th, a grey gelding ten years old, entered the hospital with the following history : A few days ago the animal received a kick on the outside of the leg, a little below the hock.

From that day he had been very lame, and about forty-eight hours before its admission a flow of synovia had taken place through the wound some three inches below the hock. On admission, the animal is found lame on three legs, the off hind extremity, the seat of the injury, being much swollen from the foot above the middle of the hock. A wound is found below that joint with large granulations protruding and a flow of suppurating synovia flows freely from it. On account of the swelling and restiveness of the animal no crepitation could be detected, and a diagnosis of simple synovitis of the hock was made with a doubtful prognosis. For treatment the animal was placed in slings, and a constant cold irrigating apparatus applied to the part, but this was found so painful to the animal that it had to be stopped after three days. By this time a peculiar crepitation could be felt on the *inside* of the hock. Attempts to stop the flow of synovia were made with different agents, the repeated application of saturated solution of chloride of zinc proving most beneficial, but not sufficient, however, to stop it permanently. The appetite of the animal remained capricious, his pulse ranging from 75 to 50, and his temperature from 103½ to 101. The treatment was thus kept up until the first of June, when a severe blister was applied over the hock. The symptoms remaining the same, the crepitation is felt better on the inside of the hock only, the leg is considerable atrophied, so is the dorso lumbar region of that side. The blister having fallen off by the 21st of June, and the general condition not having improved, the owner gave him up and he was destroyed.

On post mortem the hock joint was found, on the outer side, the seat of an abundant plastic infiltration, so thick that careful dissection of the ligaments could not be made. The whole joint being boiled and the bones scraped of the soft tissues, a fracture of the external small metatarsal was exposed, extending obliquely from the upper part of the bone about one inch below the hock, and running upwards into the center of the articular surface of the superior extremity of the bone, entering therefore into the joint. The articular cartilages of that bone, that of the lower surface of the cuboid, of the superior extremity of the

large metatarsal bone and of the cuneiform, were ulcerated and partly destroyed. The whole of the joint had been the seat of extensive periostitis, with bony deposits all over. The fragments of the small metatarsal were only partly united by an external callous.

This case presents points of interest. 1st. The fracture of a bone which is seldom the seat of such lesion alone, that is, without fracture of the principal metatarsal bone with it, a fact noticed in D'Arboval's Dictionary, by Zundel, where it is said that: *Seldom the peronei bones are fractured alone*, and record of which we failed to discover in any veterinary journal for a number of years back; and 2d. the peculiar feeling of the crepitation which, instead of assisting in the diagnosis, rather made it more obscure, and gave rise to the supposition of existing arthritis as a consequence of the existing synovitis.—Ed.

VETERINARY SOCIETIES.

OTTAWA CENTRAL VETERINARY MEDICAL ASSOCIATION.

The second meeting of the Association took place at the hall over Mr. Coleman's office yesterday, when subjects of interest to the profession were discussed. During the remarks of Dr. Coleman, the President, who read a short pithy paper on Diagnosis, he mentioned that the Vice-President, Mr. R. C. Hutchings, of Watertown, N. Y., had just sailed for England, and would, on his return, give the Association an account of foreign veterinary institutions, &c. Mr. Murcott gave an interesting description of a difficult case of parturition he had attended, which was well received by the meeting. Mr. C. Jalloway, V. S., Montreal, and Mr. George Falls, V.S., Perth, were unanimously elected members. The success of the Association is highly gratifying to the promoters. The next meeting, we understand, takes place at Brookville.—[*Daily Citizen*, *Ottawa*, *Canada*.

THE GERMS THEORY.

ITS APPLICATION TO MEDICINE AND SURGERY,

By M. M. Pasteur, Chamberland and Joubert.

Translated by A. Liautard, M.D., V.S.

All sciences gain by assisting each other. When, after my first communication on fermentations, in 1857–'58, one could admit that ferments, properly so-called, were living beings, that germs of microscopic organisms exist in abundance on the surface of all objects, in the atmosphere, and in waters, that the hypothesis of a spontaneous generation is actually chimerical, that wines, beer, vinegar, blood, urine, and all the liquids of the organism undergo any of their common alterations to the contact of pure air, the medicine and surgery paid attention to these new lights. A French physician, Dr. Davaine, made the first happy application of these principles to medicine in 1863.

Our researches of last year have left the ætiology of the putrid disease or septicemia much less advanced than that of anthrax. We have rendered as most probable that septicemia results from the presence and multiplication of a microscopic organism, but the rigorous demonstration of this important conclusion remained undone. To affirm experimentally that a microscopic organism is really agent of disease and of contagion, I see no other way, in the actual state of science, than to submit the *microbe* (new and happy expression proposed by Mr. Sedillot) to the method of successive cultivations outside of the economy. Let us note that by twelve cultivations, each of a volume of ten cubic centimeters only, the original drop is diluted as much as if it had been in a liquid volume equal to the total volume of the earth. It is precisely the kind of experiments to which Mr. Joubert and I have submitted the carbuncular bacteridie. After cultivating it a great number of times in a liquid free from any virulent property, each cultivation having for seed a small drop

of the preceding one, we have seen that the product of the last cultivation was capable of multiplication and of action in the bodies of animals in giving them anthrax with all its symptoms.

Such is, for us, the undisputable proof that anthrax is the disease of the bacteridie.

Concerning the septic vibrio, our researches had not been so convincing, and it is to fill up this vacuum that we renewed at first our experiments. With this object in view, we attempted the cultivation of the septic vibrio, obtained on an animal which died with septicæmia. Remarkable fact, all our first experiments failed, notwithstanding the varieties of the means of cultivation that we used—urine, water of the swills of beer, bouillon of meat, &c.

Our liquids did not remain infertile, but we obtained generally a microscopic organism, having no connection with the septic vibrio, and having the form, very common, of chaplets, of spheroid small beads extremely fine and without any virulency. It is an impurity sowed unknowningly at the same time with the septic vibrio, and whose germ passed, no doubt, from the intestines, always inflamed and distended in septicemic animals, into the abdominal serosity where we first collected the seed of the septic vibrio. If that supposition, regarding the impurity of our cultivation. was correct, we ought, apparently, obtain the pure septic vibrio in taking it from the blood taken in the heart of an animal dead recently from septicæmia. That is what happened, but another difficulty appeared—all our cultivations remained unfertile. More than that, this sterility was accompanied with the sort of virulent power of the seed in the liquid of cultivation.

We then had the idea that the septic vibrio might be an exclusively ancorabic organism, and that the sterility of our sowed liquids was due to the fact that the vibrio was killed by the oxygen of the air in solution in those liquids. The Academy will remember that in other experiments I had noticed similar facts upon the vibrio of the butyric fermentation, vibrio which not only lives without air, but which is killed by it.*

* Is not this vibrio the same as the septic one, a new study that we have begun?

These results had a necessary consequence. By exposing a liquid loaded with septic vibrio to the contact of pure air, all the vibrios ought to be killed and the virulency be removed. That is what takes place. Let us place some drops of septic serosity, spread on thin layer in a tube laying horizontally, and in less than half a day the liquid will become entirely inoffensive, even when, at first, it was so virulent that the inoculation of the smallest fraction of a drop of it was followed by death.

More than that, all the vibrios which fill up the liquid in profusion, under the form of moving threads, are destroyed and disappeared. After the action of the air, one finds only amorphous, fine granulations, unfit for cultivation or to the communication of any disease. It seems that the air burns the vibrios.

It is horrid to think that life may be at the mercy of the multiplication of these infinitely small ones. It is also consoling to hope that science will not always remain powerless before such enemies, when we see it, on scarcely beginning our studies, learning us for instance, that the simple contact of the air sometimes is sufficient to destroy them.

But if oxygen destroys the vibrios, how can they exist in septicæmia, where atmospheric air is everywhere present? How make these facts agree with the theory of the germs? How can blood, exposed to the contact of air, become septic by the dusts that it contains?

All is concealed, obscure, and matter for discussion, when one ignores the cause of phenomena; all is light when one possesses it. What we have just said is true only for the septic liquid loaded with adult vibrios, in way of generation by scissiparity; things differ when the vibrios are transformed in germs, that is in shying corpuscles, described for the first time in my studies upon the diseases of the silk worms, precisely in the occasion of the vibrios of the worms which had died of the disease called *flacherie.* Adult vibrios alone disappear, are burned and lose their virulency to the contact of the air; the corpuscles-germs, in those conditions, remain always ready for new inoculations.

All this does not yet solve the difficulty of knowing how septic germs may exist on the surface of floating objects in the air

and waters. Where can these corpuscles take birth? Well, nothing more easy than the production of these germs, notwithstanding the presence of the air in contact with the septic liquids.

Let us take some abdominal serosity, with septic vibrios, all in the way of generation by scission, and let us expose it to the contact of the air as we did it, with only the precaution, however, of giving it a certain thickness, even of only one centimeter, and in a few hours we will see the following strange phenomena: In the superior layer of the liquid, the oxygen is absorbed, as it is manifested by the change of color of the liquid. There the vibrio dies and disappears. In the deep layers, on the contrary, at the bottom of this centimeter in thickness of the septic liquid upon which we are experimenting, the vibrios, protected against the action of the oxygen by those which die on the top, continue to multiply by scission. Thus, little by little, they pass to the state of germs-corpuscles with resorption of the remaining of the body of the filiform vibrio. Then, in the place of moving threads of linear dimensions of different sizes, whose length often surpasses that of the plate of the microscope, we only find a dust of shying points,* isolated or surrounded by an amorphous mass, scarcely visible. And thus is formed, living with the latent life of the germs, fearless of the destroying action of the oxygen, the septic dust. And thus we are prepared to understand what at first seemed to us all obscure. We can comprehend the sowing of putrescible liquids by the dusts of the atmosphere; we can comprehend the permanency of putrid diseases on the surface of the earth.

May the Academy allow me to abandon these curious facts without showing one of the most principal theoretical consequences. At the beginning of these researches—for they only begin—and though already a new world is discovered, what is to

* In our note of July 16th, 1877, we said that the septic vibrio is not killed by the oxygen of the air, nor by the oxygen at high pressure; that it is transformed in these conditions in germ-corpuscles. There is there an erroneous interpretation of the fact. The vibrio is killed by oxygen, and it is only when it is in thickness that it is transformed, by the absence of this gas, into germ-corpuscles, and that its virulency may be perpetuated.

be looked for in most instances? It is the positive proof that there exists diseases transmissible, contagious, infectious, whose cause resides essentially and uniquely in the presence of microscopic organism. It is the proof that, for a certain number of diseases, we must forever drop all ideas of spontaneous virulency, the ideas of contagion and infection rising all at once in the bodies of men and animals to go and propagate themselves afterwards, under forms yet identical to themselves, all opinions fatal to medical progress and which rose from the gratuitous hypothesis of spontaneous generation, of ferments albuminoid matters, of hemi-organisms, of archebiosis and many other conceptions, without foundation in observation.

What must be looked for, in fact, is the proof that aside of our vibrio, there is no independent virulency proper to the liquid or solid matters, and that the vibrio is not only an epiphenomena of the disease of which it is the obliged companion. And what do we see in the results that I have made known? We see a septic liquid, taken at a certain time, when the vibrois are not yet transformed in germs, loose all virulency by the simple contact of the air, preserve, on the contrary, this virulency, though exposed to the contact of the air, with the only condition to have been in thickness during several hours. In the first case, after loss of virulency to the contact of the air, the liquid is unable to take that power again through cultivation; but in the second case, it conserves it and may propagate it even after having been exposed to the contact of the air. It is, then, impossible to sustain that aside of the adult vibrio or of its germ; there exists a virulent matter proper, liquid or solid. One cannot even suppose a virulent matter which would lose its virulency just at the same time that the adult vibrio dies, for this pretended matter would equally lose its virulency when the vibrios transformed into gems are exposed to the contact of the air. As in this case the virulency perishes, this can be but the fact of the exclusive presence of these germ-corpuscles. There remains but one hypothesis for the existence of a virulent matter in the soluble state; it is that such a matter, in sufficient quantity to destroy in our experiments of inoculation, would be constantly furnished by the vibrio itself

while in the way of propagation in the body of the living animal. But no matter, as this hypothesis supposes the existence, primordial and necessary of the vibrio

This supposition was made, and to confirm it numerous works were undertaken on the other side of the Rhine.

Doctor Panum, to-day Professor at Copenhagen, and after him several German physiologists, remained convinced of the idea that putrefaction develops in matters submitted to it, a soluble poison that neither coction nor a repeated distillation of several hours can alter in its properties, no more than chemical reactions of this order could prevent the effects of morphine or strychnine. This chemical poison is called by Dr. Bergmann and his followers by the name of *sepsine.* We have looked for it in the muscles and the liquids of the bodies of animals which had died with septicæmia; we have failed to find it yet, but we believe that we have the explanation of the facts observed by the German physiologists. The details which would be necessary to explain this, would carry me beyond the limits of this communication.

I have often said before this Academy, that there exists microscopic-ferments beings, with peculiar physiological properties, beginning at the *mycoderma aceti*, essentially ærobic, to the yeast of beer, which is at the same time ærobic and anærobic; and I have often insisted on this circumstance, that the life which manifests itself, even for a very short time, outside of all participation from free oxygen gas, carries at the same time phenomena of fermentation.

We have met in the vibrio of septicæmia, a microbe exclusively anærobic, as it develops itself only in a vacuum or in presence of inert gases. It must be a ferment. It is such. As long as the multiplication of the vibrio by scissiparity lasts, its life is accompanied with a giving-off of carbonic acid gas, of hydrogen gas, of a little of nitrogen, and of very small quantities of putrid gases. The production of these gases takes place only when the transformation of the vibrio into corpuscles-germs is about to take place.

This formation of gases during the life of the vibrio, explains

the very rapid tympanitic swelling of animals dead with septicæmia and the emphysematous state of the cellular tissue, especially in some points of the body, the groins and axillas, where the inflammation is sometimes excessive.

I must add, without waiting any longer, that all of the vibrios are not anærobic; that one of the most common, for instance, which is frequently found at the surface of the infusions of the vegetable organic substances exposed to the contact of the air, vibrio very fluxuous and very quick in its motions, is exclusively ærobic. It absorbs oxygen and exhales carbonic acid nearly in equal quantity, thus reversing the physiology of the carbuncular bacteridie.

Short of time, I will only mention, in passing this vibrio—because it has been for us the source of very interesting observations—it is inoffensive. Introduced under the skin, it gives rise only to local troubles of little importance. Comparing its innocuity to the virulency of the septic vibrio, one might believe that the mode of life, so different for both, as one is ærobic and the other anærobic, would explain the opposition of the actions upon the economy. But the effects of the carbunculous bacteridie which, also, is essentially ærobic and nevertheless terrible, would not permit to accept this proposition. If this ærobic vibrio is harmless, it is because it cannot live in the temperature of the body of the animals. Towards 38° already, its motions and its multiplication are suspended, and once inoculated it disappeared under the skin—digested, we might say.

Scientific novelties often come against prejudices. Well, some will say, what of your bacteries and vibrios? What are those infinitely small to us? Are they not seen swarming everywhere? Are they not seen in abundance upon the linen of dressings, covering even the wounds granulating fast towards cicatrization? Is there any danger?

To these I would ask, of what infinitely small do you speak? We have seen that alongside the most dangerous vibrios, there exists very harmless ones, and certainly these last are far from being the only microbes free of all virulency.

Brought by the proof of the cause of the innocuity of the

ærobic vibrio, of which I have just spoke, to institute numerous experiments upon the limits of resistance of microscopic beings to various temperatures, and having found that the carbunculous bacteridie does not develop itself, or with much difficulty, at temperatures of 43–44 degrees in some liquids of cultivation, we thought that such was perhaps the explanations of a well-known fact, though quite mysterious, viz: that some animals remain refractory to anthrax disease. It had not been possible, in our experiments of last year, to give anthrax to our fowls. Might not the temperature of about 42° of these gallinaceous, combined to the vital power, be the cause of immunity in these animals? If this supposition was correct, we ought to develop anthrax easily in fowls in lowering the heat of their bodies. The success of this experiment was immediate. Inoculate a hen with the carbunculous bacteridie, and place it with its legs in a cold bath at 25°, which is sufficient to lower the heat of the whole body down to 37–38°—heat of animals susceptible to contract anthrax—and in 24 or 30 hours the hen will die, its whole body being filled with carbunculous bacteridies. Some opposite experiments have given us favorable results, that is to say that in raising the heat of animals which are liable to contract anthrax, we have protected them against this frightful disease to-day yet without remedy. Increase or limitate the power of these infinitely small, and disturb the mystery of their actions merely by a simple change of temperature, is one of the best facts to demonstrate what may be expected from the efforts of science, even in the study of the most obscure diseases.

Let us return again to our septic vibrio, and compare it, as far as the formation of its germs, to the carbunculous bacteridie, so as to impress our minds better with that conviction that microscopic organisms enjoy varied physiological properties, and that we may expect from them many various morbid manifestations.

Positive experiments have taught us that the septic vibrio can not only live and multiply in the most complete vacuum, or in the purest carbonic acid, but that it gives there its germs and that free oxygen gas is not necessary to interfere in their formation. On the contrary, the carbunculous bacteridie, in the pres-

ence of a vacuum or of carbonic acid, is not only entirely unfit to live—that we know—but even to transform itself in corpuscles-germs. This last research is, however, one of the most delicate. So little of the air as may remain in the tubes where the vacuum is made, and where the cultivation of the carbunculous bacteridie is carried on, corpuscles-germs will appear to such an extent, that the most perfect *mercurial* pumps* are often useless to prevent the phenomena. We have been obliged to combine with the use of the vacuum of these pumps that of the liquids employed to absorb the most minute traces of oxygen, before we could convince ourselves that the carbuncular bacteridie is essentially ærobic at all periods of its life. What difference, then, between the septic vibrio and that of bacteridie, and how remarkable it is to see it multiply in the animal organism of beings so different by their mode of nutrition!

Another question, no less interesting, is that of knowing if the corpuscles-germs of the septic vibrio, though formed in the vacuum or in the pure carbonic gas, would not need, to return to life, some feeble quantities of oxygen. Physiology to-day knows of no possible germination out of the contact of the air. Well, nevertheless, the experiment proves that the germs of the septic vibrio are absolutely sterile in the contact of oxygen, whatever may the proportion of this gas be; but it is on the condition, however, that there is no connection between the volume of the air and the number of the germs; as the first germinations, taking off the air in solution, may become a protection for the remaining germs; and it is so that, vigorously speaking, the septic vibrio may propagate itself, even in presence of small quantities of air, though this propagation is impossible if air is plenty.

A curious therapeutic observation presents itself. Let us suppose a wound exposed to the contact of the air, and in the conditions of putrid state likely to bring in the patient simple septicæmii accidents, I mean to say without other complication than those which would result from the development of the septic vibrio. Well, theoretically at least, the best means to prevent death would be to wash continually the wound with water *ærated*, or to

* Pompes á mercure.

push over the surface of the wound atmospheric air. The adult septic vibrios, in way of scissiparity, would perish to the contact of the air, and their germs remain all sterile. More than that, one might throw over the surface of a wound, air overloaded with germs of septic vibrios, wash the wound with water holding in suspension milliards of these germs, without giving rise for so much the slightest septicæmia in the operated. But that in such conditions, a single clot of blood, a small fragment of dead meat be lodged in a corner of the wound, protected from the oxygen of the air, that they remain surrounded with carbonic acid gas, even to a very small extent, and at once the septic germs will, in less than twenty-four hours, give birth to an infinity of vibrios, regenerating themselves by scission and likely to produce a septicæmia fatal in a short time.

(*To be continued.*)

CORRESPONDENCE.

A SKETCH OF THE DEVELOPMENT AND PRESENT STAND OF MICROSCOPIE IN GERMANY.

By Dr. Edward Kaiser.

From the Zeitschrift fur Mikroscopie, No 1, *Oct.* 1877.

BY A LADY FRIEND OF THE REVIEW.

The question as to when the microscope was first used in Germany as well as the time of its discovery is involved in impenetrable darkness.

The names of the first mikrologes are also entirely unknown. Philippus Bonannus is mentioned as the first who worked with the microscope and gave his discoveries to the world. George Hufnagel, of Frankfort, in the year 1592, published a work on insects, with fifty copperplates. Herr Harting, however, declares in his valuable researches this assertion to be very doubtful. According to his conclusions, the microscope was discovered several

years before the year 1610, but certainly not before 1584. From the time of its discovery until about 1600 it remained comparatively unknown.

It is worth mentioning, however, that the first microscope, as is reported by Leibnitz, was brought from England to Cologne, in 1638, and not directly from Holland, the real cradle of microscopy.

Perhaps, however, there may have been isolated cases where microscopical work was carried on in Germany.

The fact is that the microscope first came into use, after the labors of Hooke, Malphigi, Leeuwenhock, Schwammerdan, Ruysch and Grew were given to the world. The endeavors in the microscopical field remained very few, a circumstance which was caused by the defective construction of the microscope of that day, which gave no accurate results.

As the discovery of the microscope was the absolute *conditio sina que non* for the origin of microscopy, even so, the perfection of the microscope, through the manufacture of acromatic objectives, was the indispensable condition by which microscopy could be improved and perfected to an exact scientific discipline, so that the use of the microscope could be extended and applied to scientific research.

Although the honor of the discovery of the microscope belongs to Holland, Germany and Holland shared the discovery of acromatismus, through the labors of Van Deyl and Frawenhofer from 1807–1811. The first era of microscopy begins with the manufacture of acromatic lenses. We must, therefore—for the history of microscopy in general, as well as its development in Germany—describe two periods, the first, from about the year 1600 until 1811, that is from the discovery of the microscope, and the introduction of the microscope into Germany, to the first use of the acromatic lens. The second period extends from 1811 to the present day. In both periods, the progress of microscopy is closely allied to the perfection of the microscope. In the examination of the steps in the development of microscopy, it is absolutely necessary to search for the first line in the development of the microscope.

In the second period an event presents itself, which induces us to divide this period into two subdivisions. In the year 1839, Schwamm published his work on the foundation of all organic bodies—the cell. This was succeeded by a much needed, very valuable work, for instruction in the use of the microscope. The great and progressive improvement in the microscope, had made possible the works of Schwamm and Vogel.

The basis for this progress in the formation in the compound microscope was laid in France in 1824, through the discovery of the possibility of uniting several acromatic lenses to made an objective system. Selligue aud Chevalier were the first who worked with them. Amici obtained such favorable results that the work of perfecting went on, which led to the first histological work of value.

We separate the second period of the German microscopy into two parts: The first extending from 1811 to 1839, and the second extending 1839 to the present day.

As we do not intend to examine more fully the development of the German microscope, we shall not sketch its history further, but confine ourselves to mentioning the most important historical details, in order to understand rightly the position of microscopy in Germany.

If we consider the progress of microscopy in Germany we shall see that it is identical with the development of the microscope itself. We shall examine first the simple and then the combined dioptric microscope.

The oldest, simple, dioptric microscope known under the name Vitrum publicarum, was very little qualified for microscopial observation, as the medium failed to regulate the distance between lens and object. It consisted of a short tube, with a lens which magnified about nine times, and on the other end, a flat glass plate upon which the object was glued—a flea or something of the kind. Other simple microscopes were constructed of lenses enclosed in a ring or cylinder, which rested upon an upright, the object being placed upon a second, which was arranged so that the correct focus was obtainable. Still, more perfect instruments were made in 1673, by Leeuwenhock, many of which were brought

to Germany. These instruments magnified, on an average, from 70-130 times, and in their entire constructions were more useful for scientific observations.

The first and oldest German microscope maker was Cosmus Conrad Cuno, of Augsburg. His microscopes were of a different construction, but were the equal of those of Leeuwenhock, in mechanical work. His lenses, however, were far inferior.

As the work of cutting lenses was very tedious, small melted glass balls were used. These were first made in Germany by Frederick Schrader, and were really more advantageous than the first cut lenses.

At the commencement of the eighteenth century, the simple microscope called the Wilson microscope, was brought in large numbers from England to Germany. In 1740, the maker added a glass for reflecting lights. At the same time, Johann Nathaniel Lieberkuhn of Berlin, made himself famous, through his excellent, powerful lenses, and in constructing an anatomical microscope, very similar to a microscope made by Lentmann, but which, in practical value, did not compare with it.

A century after the discovery of the single microscope progress had been made, through many contrivances, so that the distance between object and lens could be regulated. The arrangements were primitive indeed if we judge them by our present mechanism. Very small biconvex glasses were used as lenses, with a magnifying power of 2-300 times. Oftener small glass balls were used with a still greater magnifying power. By this manner of magnifying the light was not sufficient, so a lens was placed behind the object in order to concentrate the light upon it. Others proposed regulating the light by the use of diaphragms, to be arranged according to the objects under observation.

Lieberkühn, improved illumination from above by the introduction of concave metallic mirrors.

One obstacle still remained to the simple German microscope, the fact that the operator held his hand against the light, thereby hindering essentially many researches. This inconvenience was, overcome by Joblot, through the introduction of a lens holder, with a jointed foot; and later, as already mentioned by Wilson

by means of reflecting mirrors. It had now become apparent that an object table was necessary to complete the microscope, which likewise demands an increase in the solidity of the stative. In this manner, as well as through the improved lenses the magnifying power had been increased nearly 700 times, so that better and more perfect focusing arrangements became absolutely necessary. The first simple microscope with an object table was made by Cuff, in 1755. This microscope had better arrangements for more accurate focusing. In the last half of the last century, as well as in the first half of this century, microscopes were made more or less similar to those of Cuff. Joblot, in France, in 1718, improved the optical apparatus by uniting two biconvex lens into a double, which Euler first made practical and brought into a condition suitable for general use.

This was the point of development to which the simple micoscope had arrived at the end of the first period in the history of microscopy. It deserved unreservedly the preference over the compound microscope. For this reason all the most important micrographic researches were carried on by the aid of the simple microscope. Many doubted the possibility of perfecting the compound microscope so that it could replace the simple one.

Let us examine the development of the compound dioptric microscope.

In what form, the compound dioptric microscope came from the hands of the discoverer, it is impossible to declare with certainty, yet, we can safely affirm, that it consisted of two convex glasses. This arrangement was used until the middle of sixteenth century, then a third lens—convex, was added, or two plain convex lenses. Its power was very small and as a maximum about 80 lines. One hundred and forty diameters could be attained by lengthening the tube in an extraordinary manner.

Among the oldest and most famous compound microscopes were those made by Robert Hooke, the Roman Eustachio Divini. On the principle of Divini, Johann Franz Grindl of Ach, made, in 1685, a microscope which had six plain convex lenses arranged in pairs, with the convex surface turned toward each other. Over the ocular was a perfectly plain glass. The compound microscope

was essentially improved thereby. It obtained but little favor, although a century later his compound microscope, in practical construction, was better than the microscopes manufactured at that day. This surprising condition of affairs had its origin in the difficulty of uniting the lenses in such a manner that their poles lay in a parallel line. Grindl recognized this difficulty and overcame it.

At the same period the compound microscope was still further perfected by Carl Anton Tortona, by means of a perforated object table, rendering the use of reflected light much more practicable. Smaller lenses, with a narrow opening, could be used, so that greater magnifying power could be produced without using a stronger ocular or lengthening the tube of the microscope. With the power of 80 diameters of the past it was impossible to obtain pictures that were recognizable, which can accomplish at the present time with a power of magnifying 20 times so that it was now possible to obtain good results with powers of 2–200 diameter. This was acheived by Philippus Bonannus, who applied a mechanical apparatus for changing the distance between the objective and the object.

Up to this time greater magnifying power by this microscope was produced by lengthening the tube, and thereby the distance between the objective and the ocular. Bonannus employed the use of three different tubes, each of which contained three biconvex lenses. Bonannus used artificial light to illuminate by his instruments, although daylight was perfectly practicable. The artificial light was conveyed by means of a lamp through two biconvex lenses.

(*To be continued.*)

SUNDRIES.

HOGS IN THE UNITED STATES.

The Commissioner of Agriculture furnishes the following statistics of the number of swine in the United States, from which it appears that Iowa has stood foremost among the pork-pro-

ducing States, for three years past, with Illinois a good second. Indiana held third place two years ago, but for two years past Missouri has taken that position. Ohio comes next on the list; and these five great States, it will be seen, furnish about forty per cent. of the entire number in the United States. The interest appears to be rapidly assuming large proportions in Kentucky, Tennessee, North Carolina, Georgia, Mississippi, and Texas; while the general aggregate is not now quite up to the figures reached in 1873, the intervening years showing considerable falling off. The Commissioner's figures are as follows:

	1878.	1877.	1876.
Iowa	2,950,000	3,263,200	3,296,200
Illinois	2,900,000	2,750,000	2,640,100
Missouri	2,585,600	2,560,000	1,874,300
Indiana	2,422,500	2,375,000	2,136,000
Ohio	2,250,000	1,755,700	1,596,100
Kentucky	1,950,000	1,588,200	1,604,300
Tennessee	1,900,000	1,087,900	1,026,400
Texas	1,716,700	1,144,500	1,090,000
Georgia	1,586,900	1,483,100	1,360,700
Mississippi	1,284,400	1,189,300	792,900
North Carolina	1,180,000	735,500	758,300
Arkansas	1,040,300	1,000,300	901,200
New York	975,000	580,000	568,700
Alabama	952,300	793,600	755,900
Pennsylvania	937,200	901,200	875,000
Virginia	759,200	607,400	589,800
Wisconsin	635,300	562,300	540,700
Michigan	556,100	505,600	459,700
South Carolina	450,000	284,100	275,900
California	438,500	417,700	363,300
Kansas	431,700	359,800	246,500
Louisiana	350,000	242,600	222,600
West Virginia	281,500	270,700	248,400
Maryland	259,600	252,100	233,500
Nebraska	255,700	170,500	80,900
Oregon	198,100	188,700	181,500
Florida	190,000	166,600	175,400
Minnesota	180,000	215,500	213,400
New Jersey	154,400	151,400	153,000
Massachusetts	78,600	78,600	75,600
Maine	62,200	59,900	58,800
Connecticut	59,500	58,400	57,900
Vermont	54,300	53,300	51,800
Delaware	47,600	46,700	46,700

	1878.	1877.	1876.
New Hampshire	42,900	38,700	37,300
Rhode Island....................	18,100	17,100	16,300
Colorado........................	12,500	......	......
Nevada	10,800	5,400	5,200
The Territories.................	105,000	116,500	116,500
Total...............	32,242,500	28,077,100	25,726,800

Number reported in the United States in previous years:

1875...............	28,062,200	1872...............	31,796,300
1874...............	30,860,900	1871...............	29,457,500
1873...............	32,632,050	1870...............	26,751,600

—*National Live Stock Journal.*

CURE FOR SPRING HALT.

In order to cure the spring halt, split the skin on the inner side of the affected leg, four inches above the hoof, over the main middle vein of the leg, and underneath the vein you will find a small cord about the size of a rye straw. This must be taken up with an awl and cut in two, which will certainly cure. Let the operator be careful not to cut the vein, or any of the sinews of the leg. Wash the wound with soapsuds, twice every day till it is well.

METRIC SYSTEM.

FORMULÆ FOR CONVERTING TROY INTO METRIC WEIGHT.

EXACT EQUIVALENTS.		GRAMMES.	CONVENIENT APPROXIMATIONS.	GRAMMES.
gr. i	=	0.064	gr.j	0.06
gr.15. $\frac{432}{1000}$	=	1.00	gr.xv.	1.00
ʒ i.	=	3.88	ʒ i.	4.00
℥ i.	=	31.10	℥ i.	30.00

Fluids as well as solids are prescribed by weight.

SPECIMENS

SENT TO THE MUSEUM OF AMERICAN VETERINARY COLLEGE.

105.	Jaws, 32 years old	C. H. PEABODY, D.V.S.
106.	Os Pedis, showing absorption	" "
107.	Fracture of Tibia at Tibio Tarsal Joint	" "
108.	Osteo-sarcoma, Lower Maxillary. Cow	A. LIAUTARD, M.D., V.S.
109.	Patent Shoes	C. H. PEABODY, D.V.S.
110.	Parrot Mouth	L. T. BELL, D.V.S.
111.	Monkey's Skull	A. LIAUTARD, M.D., V.S.
112.	Shoe for Navicularthritis?	L. MCLEAN, V.S.E.
113.	Fracture Metatarsal Bones	W. ROSE, V.S.
114.	Strongylus Paradoxus	J. B. COSGROVE, D.V.S.
115.	Hair Ball from Stomach of Calf	W. ROSE, V.S.
116.	Atlas with Ulceration, Osteitis and Exostosis	"
117.	Skull of Monkey	A. LIAUTARD, M.D., V.S.
118.	" Mastiff Dog	" " "
119.	" Greyhound	" " "
120.	Star Fish	S. S. FIELD, D.V.S.
121	Navicular Bone, showing arthritis	A. A. HOLCOMBE, D.V.S.
122.	Orchitis	W. B. MILLER.
123.	Larynx	C. H. PEABODY, D.V.S.
124.	Lumbar Vertibræ of a Whale	G. BAILEY, ESQ.

A NEW TREATMENT FOR LAMINITIS.

Copious bleeding is indispensable, say six or eight quarts taken from the neck-vein and two or three from the plate-veins of the legs. Turn up his feet, fill the feet with spirits of turpentine, set it on fire and let it burn until the foot is well warmed; make a rope of hay or straw and wrap his legs from the hoof to the body. Steam well with warm water, give one ounce of aloes, dissolved in one pint of linseed oil, give green feed or bran mashes, compel him to take a little slow exercise; after he has somewhat recovered, stand in a vat or mud-hole five inches deep, so as to soften his feet. If he is barefooted, put on a thick, heavy pair of shoes—iron is a good conductor of heat, and thereby keeps the foot cool. —*Loc. Cit.*

AMERICAN VETERINARY REVIEW,

SEPTEMBER, 1878.

ORIGINAL ARTICLES.

THERMOMETRY OF THE DOMESTICATED ANIMALS,

AND ITS USE IN VETERINARY MEDICINE.

BY AUG. ZUNDEL.

Translated from "Vortrage fur Thierarzte." Series I, Heft III., by G. A. Banham, M.R.C.V.S.

The importance to which the exact measurement of the temperature of the body has of late years attained, and the general value of the thermometer in veterinary, as well as in human medicine, has induced me to place before the reader a short sketch of the phenomena in the domestic animals.

If we assume that the application of the thermometer is often over-estimated in the daily practice, as it frequently appears to be, yet we acknowledge on many occasions, the indisputable utility of measuring the temperature, since by this means, we ascertain many occurrences and changes in the organism, which would otherwise have been delayed to a much later period by ordinary symptoms. The thermometer has been the means of ascertaining many scientific results, which led to the explanation and unravelling of many hidden and obscure patho-physiological questions. Heat is a physical agent in all the physiological and pathological phenomena

of life, and is the principal cause of all manifestations of vital power from whatever source they are derived. The domestic animals and birds present a tolerable *constant temperature* in health, *i. e.*, their warmth is not dependent upon the medium in which they live. In disease, however, we find more or less alteration, and as Claude Bernard has proved, a disease may be fundamentally diagnosed by the mere deviations of the temperature from the normal standard. When the natural warmth of the body exceeds a certain degree, death follows from the excessive combustion of the tissues, just the same as would be produced by external (artificial) heat. On the other hand, life is impossible if the temperature of the body is cooled below a certain point. Thus by artificially cooling an animal below 20° cel., the natural temperature cannot be restored, and therefore death ensues.

Claude Bernard has also shown, that if animals are exposed to a high degree of heat, so that their internal temperature rises 4° to 5° above the normal point, they die. Richardson gives us 5.5° to 6.5° as the limit to which the internal temperature of warm blooded animals can be raised without causing death.

It was observed as far back as the time of Hippocrates, that an increase in the temperature of the body was an important sign of acute disease. But it is self-evident that an exact measurement of the warmth of the body could only take place, after the discovery of the thermometer, for the method of ascertaining it by the hand, is very untrustworthy.

The first observations with the thermometer are ascribed to a Venetian physician, named Sanctorius, (died 1638), and its value in disease was promoted by Boerhave, Van Swieten, and more especially by De Haën. In later times it was used by Hunter, Currie, Lavoisier, Dalton, and in the first half of this century by Chossat, Donne, Gavarret, Andral, Traulee, Mayer Helmholtz, De Costa, Baerensprung, and many others.

In the year 1852 Claud Bernard communicated to the Academie des Sciences of France, the influence the division of the sympathetic nerve had on the generation of heat, and many investigations were carried on in this field, and especially in Germany. Wunderlick's work on "The Relation of the Temperature of the

Body in Disease," (1852), created considerable attention. He was the first who maintained that it set down rules and regulations in the course of certain forms of disease, manifested by the rising and falling of the temperature. Soon after this followed the excellent publications of Liebermeister, Thomas, Marey, Hirtz, See, Alvarenga, Woillez, Bulker, and others.

The thermometer was then introduced into veterinary medicine. The first observations were made by Bassi, Schmelz, Schmidt, Adam, Gerlach, Zangger, Leisering, Stockfleth, Rueff, Sanderson, Colin, Trasbot, Zundel, Pfley, Lydten, Bayer, Anacker, Brusasco, Krablee, Flemming, Siedamgrotzky, Dele, and others, whose results I have taken for the foundation of the following.

Before we consider the aim and signs which the thermometer affords us, we must reflect on some important physiological facts, which arise from the development of the specific warmth of the animal body.

The source of animal heat is produced by the chemical changes which take place in the body, due to the reception of oxygen from the external atmosphere entering into combination with the tissues. That portion of the heat which becomes free (or generated in excess) is called sensible (or palpable) heat. The lungs serve as a simple reservoir for the oxygen, and no peculiar warmth is generated *in* the respiratory organs themselves; they undergo just the same slow oxydation as the other tissues of the body, which is effected by means of the circulation of the blood, thus distributing the warmth equally in all parts, the circulation being under the influence of the nervous system. Thus the nervous system may be looked upon as the regulator of the temperature of the body.

When the temperature of the external atmosphere stands at nil 0° centigrade, the cold acts as an irritant to the peripheral nervi-vasorum, causing the superficial blood vessels to contract, and as a consequence, less blood to the surface of the body to be acted upon by the cold air. The diminished quantity of blood to the surface, also causes a decreased evaporation from the skin, therefore, less loss of warmth than usual. The internal temperature of the body remains normal.

If the external temperature is higher than that of the body, it has no influence on the heat of the body. The circulation of the blood is quickened, the vessels are enlarged, the skin contains a larger quantity of blood, thus causing sweating and increased evaporation from the surface; the breathing also becomes accelerated, causing more cool air to enter the lungs, which coming into contact with the capillary circulation of the lungs, abstracts heat from the blood, thereby cooling the body.

The specific temperature of animals varies in different species. Thus, in man it is only 37.5°c., whilst in all the domestic animals it is higher. In the horse we find it about 38.25°c., but it may become as low as 37.6°, and rise to 38.7°c., and yet the animal be in perfect health. In cattle the average is 39°; in sheep 40.25°; swine 40.50°; dog 38.10°; cat 38°; and rabbits 38.25°. These numbers are only to be looked upon as averages, for we may have very striking fluctuation in different animals of the same species. For example: the lowest point which has been observed in a healthy dog is 37.4°, and the highest 40.6°. We may look upon this as explanatory of the discrepancies which we find from the various observers. Whilst Fleming gives tolerable high numbers, we find Gurlt and Siedamgrotzky moderate, and Krablee gives only low, without assigning any special causes.

The above are average degrees, and are taken from numerous observations of veterinary surgeons.

These variations in temperature are often due to the warmth of the thermometer itself, and to the manner and mode of application.

Again, we do not find the same temperature in all parts of the same body. The coldest part being the tegumentum communis, due to its contact with the cold objects, also to radiation and evaporation. Parts which are sheltered by hair, those portions which are in contact with others, such as under the mane, tail, between the limbs, &c., are of a higher temperature, because the air is not so quickly changed in these parts as in those less protected.

Although the blood circulates throughout the whole body, by which means the temperature of one part compensates that of

another, thereby causing a tolerably even temperature in the body yet we find it is not the same in every part. In these organs in which much warmth is generated, we find the blood (venous) flowing *from* such organs to be much warmer than that (arterial) which supplies it, and in those organs in which warmth is expended, the opposite is the case. The blood contained in the heart shows great variations of temperature, sometimes that of the right and sometimes that of the left being warmest. Haller, Krimer, Saissy, J. Davy, Masse, Becquerel and Breschet, found the arterial blood always warmer than the venous; Berger, Collard de Martigny, Hering, Cl. Bernard, observed the opposite to be the case. They held the blood of the left side of the heart to be about 0.2°c. colder than the right. Colin took comparative temperatures of both sides of the heart of horses, cattle, sheep and dogs, and in 93 cases, he found 21 in which both sides were the same, 45 in which the blood of the right side and 27 when that of the left was warmest.

Clinical Thermometry is that which furnishes us with the variations of the animal temperature during disease, and it expresses this in numbers, so that it does not depend upon the practice and acuteness, &c. of the examiner. The thermometer then proves of immense advantage to the practical veterinarian, by aiding him to make a correct diagnosis and prognosis, which he could not obtain by any other means; also under some circumstances it points out the approach of disease, which would not have been discovered until much later by the ordinary symptoms of the disease. It also provides valuable hints in the treatment of disease, which would have been delayed until the causes had produced their physical phenomena.

Schmelz remarks that the thermometer is just as valuable to judge the course, and fix the diagnosis and prognosis of a disease, as auscultation and percussion is in disease of the thorax; and it provides a means of explanation, when other symptoms are liable to lead to error. Wunderlich compares a surgeon who forms an opinion of a case of fever, without the aid of the thermometer, to a blind man seeking his way in a strange locality. The warmth of the body resembles that of the blood, whose con-

dition depends upon the general condition of the body and constitution; thermometry also gives a clue to the healthiness of the animal.

The thermometer, however, cannot be looked upon as a common method of investigation in all cases, where a variation of temperature presents itself; but with this, we can hardly acquiesce, especially with relation to veterinary science. Such assertions are only useful under certain conditions, of which we will speak later. The thermometer was brought into common use, from the great value it proved in many patho-physiological discoveries; but it appears to us, that fever can very often be sufficiently known and judged of by the ordinary means of investigation; and the value of the pulse and knowledge of the temperature with the hand in diagnosis and prognosis of fever, has been denied and contradicted ; but we must not go too far in this view, and neglect the most exact means we have for measuring the temperature, viz : " the thermometer."

This instrument is necessary where exactness is required, and it answers the same purpose in investigating the temperature, as the second hand does in ascertaining the number of the pulse.

For the correct measurement of the temperature we make use of the common thermometer, constructed of a graduated glass tube filled with mercury, which for medical purposes is generally placed within a second glass tube. Its graduated scale ranges from 35 to 45° celcius, or sometimes from 30 to 50° ; each degree is divided into fifths, or better still, into tenths. The bulb containing the mercury should be made of thin glass, so that it can be easily acted upon by the warmth of the body, the bore of the tube being fine. There is a modified thermometer called the *Maximum Thermometer*, which is constructed by allowing a small quantity of air to enter, and divide about a half-inch of the mercury from the superior part of the main column, but this has not all the advantages which were credited to it. In using a maximum thermometer, the uppermost end of the small divided portion of quicksilver shows the degree of heat attained, and when the thermometer is brought into a cooler medium, the main column falls, but the small divided portion remains fixed, thus giving us the opportunity of reading it at our leisure.

To ascertain the degree of heat still more exactly in two different parts of the external integument, also in the deep tissues of the body, the thermo-electrical apparatus is made use of; but as this, as well as the thermograph, are only used for continuous observations, we shall not notice them in this paper.

The temperature of our domesticated animals is generally obtained by placing the thermometer six or eight inches in the rectum, and in complete contact with its walls; it should be left in this situation for about ten minutes, after which it may be read by partially removing it, and then replaced for another two minutes and again read; and if the mercury has remained stationery, we may receive it as the correct temperature. In order to attain the limit as quick as possible, the thermometer should be brought to the normal temperature of the body, by rubbing the bulb with a cloth, or by placing it in warm water, or carefully holding it over a light, before its introduction into the rectum. A false result may be obtained by the rectum being filled with excrement. Again, according to Billroth, the introduction of the instrument itself may cause the intestine to contract and thus produce a change of temperature.

The vagina has been recommended as a convenient place for the introduction of the thermometer in the female, but as this is about 0.2° to 0.5° and (according to Gerlach) even a whole degree colder than the rectum, from the fact that the cold air can more readily pass into this cavity than into the rectum; on the other hand, there are times when the temperature of the vagina is about 0.1° to 0.3° above that of the rectum (Brusaseo, Rueff, Anacker), such as during the last days of pregnancy, due to the presence of the fœtus; also for some time after birth, and also at the time of sexual desire, which is called "heat."

On account of the variations of the temperature in different situations of the body, it is advisable that we should adopt one recognized place in order to obtain unison in the results. For this reason *all practitioners should apply the thermometer in the same situation of the body, the rectum being almost generally adopted for the domesticated animals*, the same as the arm-pit is used by observers in human medicine.

It should always be borne in mind, that the thermometer must be properly cleaned and disinfected after being used on animals suffering from a contagious disease, such as rinderpest, anthrax, glanders, variola, etc., in order to prevent the possibility of inoculation, which has been known to occur from this cause.

With regard to the *time* and *frequency* of its use, it is important that the same time and manner should be followed each day, and that the temperature should be taken twice (or even more frequently) during the day, also at those times which are supposed to be the lowest and highest limits of the normal temperature of the body; for instance: if the temperature is taken twice a day, the same time morning and evening should be chosen each day, and if there is any exceedingly remarkable differences at either observation, it should be repeated to confirm the correctness of the same.

The result of each examination should be noted, this being best accomplished by special tables, on which a simple line is drawn from point to point at each examination, thus giving a sketch of the variations of temperature from day to day during the course of a disease. Many clinicers note down at the same time the curve of the pulse and respiration on the same table, also the number of the pulse and respiration. In this way he has a concise table of the relations of the temperature to the pulse and respiration.

Before we pass on to study the changes of temperature in disease, we must notice a few circumstances which influence the temperature, and therefore require our attention.

The Age.—The temperature of young animals is often about 0.5° higher than that of those which are fully developed. During fever, however, the relation remains the same, except thatt he deviations from normality are quicker. Richardson attributed this increase of the normal heat of young animals to their adipose tissues being more developed, fat being a bad conductor of heat.

In *old animals* the temperature is often 0.5° or even 1° lower than the normal (Siedamgrotzky).

The temperature is normally higher in animals which are well fed than by others; because they are covered by a certain amount of fat which prevents the loss of heat.

(TO BE CONTINUED.)

Name . . . .

Sex . . . . *Color* . . . . *Age* . . . . *Disease* . . . .

Admitted . . . . *Discharged* . . . . *Result* . . . .

					TEMPERATURE.											
DATE.	PULSE.	RESPIRATION.	DATE OF DISEASE	STABLE TEMPERATURE	97	98	99	100	101	102	103	104	105	106	107	
																Morning. Evening.
																Morning. Evening.
																Morning. Evening.
																Morning. Evening.
																Morning. Evening.
																Morning. Evening.
																Morning. Evening.
																Morning. Evening.
																Morning. Evening.
																Morning. Evening.
					97	98	99	100	101	102	103	104	105	106	107	
					TEMPERATURE.											

A CONTRIBUTION

TO THE PATHOLOGY AND ÆTIOLOGY OF HUMAN AND ANIMAL VARIOLÆ.

TRANSLATED BY F. S. BILLINGS.

(*Continued from page* 201.)

:o:

From the history of retro-vaccination we deduce, that the lympth of retro-vaccine is of equal value with that of true vaccina, and as we have, per exclusion, come to the conclusion that the origin of bovine variola is either to be sought in variola humana vera, or more generally in humanised vaccine, we will now turn ourselves to the proof of our conclusion. By the consideration of the so-called "original, genuine" bovine variola, four things become apparent, aside from the sporadic character of the same:

1. *Variola vaccina is almost exclusively limited to milch cows.*
2. *Variola vaccina has its seat exclusively upon the udder of the same.*
3. *Variola vaccina comes to observation principally in Spring and the early months of Summer.*
4. *The development of the variola upon the udder does not take place concomitantly, but as a rule irregularly.*

This idiosynic character of variola vaccina offers a striking variation from that of all other infectious diseases. Authors have sought to explain it in various ways. We have already referred to this subject, and have found, among others, that it has been supposed that cattle possessed in Spring a peculiar inclination to cutical exanthemata, and further that changes of food, and the thereby functional congestion to the lacteal glands. was supposed to exert an unfavorable influence; and that it has been assumed that milk cows only possessed a disposition to this disease. By all who assumed the epigentic origin of the disease it remained an unsolved enigma why male, or castrated animals, calves and heifers were not so frequently attacked by the disease as the milk-cows,

and why by milk-cows other delicate parts of the cutis were not complicated as well as the udder. I have previously mentioned that in those seldom cases where non-milking calves, or young animals and bulls were complicated by the disease, that in almost all cases it was possible to prove that the animals in question had been a short time previously infected by diseased milk-cows. As we have already concluded that an infectious disease like this, which appears so seldom, and then only sporadic in single cases, or as an enzootic as limited to stables or droves, must necessarily descend from other forms of variola; as we have excluded all other genetic points except variola humana vera, or humanised vaccine, from our consideration and have shown that although variola vaccina may indeed exceptionally descend from variola humana vera, there now remains only humanised vaccine from which to derive the origin of the original or genuine bovine variola. Having narrowed our conclusion down to this one point, it is not difficult to comprehend why variola vaccina does not assume an epizootic character; why its processes are limited almost exclusively to the mammæ of the cow; why it appears mostly during lactation and in Spring and early Summer; and why the eruption appears in such an irregular manner; why the so-called original bovine variola appears mostly during Spring and early Summer—at the legal time of vaccination; why it appears only upon the udder of milk-cows, and then only during the lactation period; and why the development of the variola from self-infection is generally irregular, all find a simple explanation in that the vaccine contagium of the human protective variola is accidentally conveyed to the udder of the cow by manipulation of milking by the hands of milkers which have previously been in relation with the inocul ted pustule of children.

Therefore genuine bovine variola—v. vaccina—generates, or owes its origin, at present in those countries where vaccination and re-vaccination of man is practised, to the human proctive inoculation of variola.

The following may serve to substantiate the above:

1. Osiander describes a case of accidental infection of a cow by a boy who had been vaccinated but a short time previously.

2. Koch (Prussian Veterinary Reports with Reference to Contagious Diseases, 1870–'71) reports that the vaccination of the people of a farm occasioned the infection of the cows of the same and eruption of v. vaccina.
3. In the same Report, for the years 1871–'72, is reported an outbreak of v. vaccina among a lot of cows. The first eruption was perceived three or four weeks after re-vaccination of three milkmaids. The disease extended gradually, so that in fourteen days of twenty-six cows only three remained immune from the disease. Most of the cows had only isolated variolæ upon the teats, on others, however, numerous variolæ were apparent upon both teats and udder.
4. In the above Report for years 1874–'75, Damman reports an outbreak of v. vaccina in the Kries Rugen among single herds, at the same time that the inoculated variolæ were in full bloom among the children of the district.
5. In the Spring of 1876, Schneider communicated to me, that at the time the inoculation of the children began, he observed genuine bovine variola by four cows in two stables, which became transmitted to two milkmaids, and from one of the same in all probability to her children.

To these communications, which put beyond doubt the origin of v. vaccine from the protective variola of man—menschlichen schutzpocken—I add a communication from Reiter, the trustworthiness of which is beyond all doubt. Reiter saw in stables, the cows of which he had inoculated with humanized vaccine, that the true bovine variola frequently came to eruption by several non-inoculated cows, and was characterized by the same course and phenomena as that which came to pass in unknown ways—that is, the so-called "original" bovine variola.

The following experiment of Roloff shows that the transmission of the contagium of vaccine to the udder of the cows takes place without any difficulty by means of the hand of the milker, which is the general vehicle:

When a plate of glass, upon which was a very insignificant quantity of lymph from the inoculated variola of a man in a dried condition, was rubbed gently across the slightly eroded

surface of the scrotum of an ox, it led to the development of a variola on the place in question. Ceely reports cases which fully demonstrate the facility with which variolic contagium attaches itself to a delicate cutis: Ceely frequently applies vaccine to the cutis of children and young persons without having recourse to puncture and obtained positive results in that he applied the lymph directly to the cutis, and covered the same with a thin layer of blood, which soon dried and protected it from the action of the air.

In opposition to my assumptions it may be asked, Why the hand of the milker is not first infected with the vaccine? I can only answer, that in this direction the long-continued and frequently-repeated manipulations of milking fail as assistant causes; and on the other side the cases are not infrequent, where an infection of the hand or arm of the milkers is infected from the udder of the diseased milk-cow. Again, cases of accidental transference of humanized vaccine from man to man are now and again reported. Sacco reports of a 19-year-old servant-girl who attended two vaccinated children, and who had frequently to change the bandages of the suppurating pustules, that a pustule appeared on the eighth day upon the little finger, which took a regular course, and generated vaccine pustules on being inoculated to others. As the vaccine of the cow may be transmitted to milkers, so may the accidental transmission of humanized vaccine from man to man take place.

As a final reason, that the so-called genuine bovine variola comes to pass only by means of foreign infection, I must call attention to the fact, that the local eruption upon the udder almost always takes place gradually, from time to time, not coevially. In my opinion, this fact finds only one satisfactory explanation, viz: that from one or more variolæ due to primary infection, secondary variolæ are again developed by means of self-infection, which is very easy in consequence of the intimate relations which frequently take place between the stable floor or the bedding, or by means of the manipulations of milking. On the contrary, we see by human and ovine variola, where the organism is infected by the volatile contagium by the way of

inner infection, a tolerably coevial eruption of the exanthema. By vaccination of man we observe—as a whole, seldom, however—occasionally an uneven development of the vaccine pustule, as well as the eruption of secondary pustules, by which perhaps like factors come into play as by variola vaccina. Again, if a generally acting cause constituted the original development of vaccina, all the animals in the stable would be liable to be attacked at about the same time; whereas, we know, that the disease very gradually extends over the members of a stable or herd.

Our considerations over the origin of variola vaccina lead us to the following conclusions:

There is no such thing as a so-called genuine, original "bovine variola," variola vaccina. Variola vaccina always owes its genesis to external infection, and indeed either from variola humana vera, or, which is at present the most frequent, by interposition of the hands of milkers, from humanized vaccine, which is distributed on all sides; according to its origin, the latter is always a variola vaccine. The vaccinated or re-vaccinated human being is, therefore, not so harmless a creature as is generally assumed; he is in condition to cause the development of variola vaccina. When the process is once present by a cow, it extends itself from the same by mediate infection to others of the same stable or herd, and often enough back to the milkers.

According to all which has been said, we must say we hold the careful search for original bovine variola as unnecessary and unjustified, as we can immediately produce it by inoculation of cattle with humanized vaccine—retro-vaccination—the product being throughout identical and homologous with the so-called "original," "genuine" bovine variola.

The question, Which is the better and most active for the protective inoculation of man—the employment of the humanized lymph or the original vaccine? seems to be solved by our previous considerations, as both appear of equal value, both having originally sprung from variola vaccine. I would formulate the question as follows: Which is preferable for the purpose of human vaccination, humanized vaccine which has been passed through numerous generations of man, or animal vaccine which

has been passed through a succession of animal generations—retro-vaccine—or the primary variola vaccine—vaccinated variola—won by the inoculation of variola from man to cattle? The so-called animal vaccine—cultivated vaccine—is in my opinion nothing more than retro-vaccine originally derived from humanized vaccine, which derives its present cognomen of "animal" on account of its being passed through several generations of calves, and forms a sort of "potentized retro vaccine." In proof of the same, I will say, that inoculations of human beings with such long cultivated animal vaccine give in general the same favorable results, as inoculation with retro-vaccine which has been directly won from humanized lymph. We have yet to make a few remarks over certain *properties* of the *contagium of variola vaccina*, which have a general pathological interest.

As is known, the contagious elements of vaccine are always of a fixed nature. If our views are correct over the origin of variola vaccina, vaccine offers an example of a metamorphosis taking place in the bovine organisms by means of which the original volatile contagium of variola is transformed into the fixed vaccine. If we assume, which at the present day is scarcely doubted, that the ætiological and to all intents identical contagium of both human and bovine variola is of a corpuscular nature, it is in all cases difficult to understand why the same contagium is at one time in condition to penetrate the human organism by means of the atmosphere, and why it is only dangerous to the bovine organism in a fixed condition; especially is this the case when we remember that vaccine is easily conserved in a dessicated form and possesses an important degree of tenacity, which it soon loses in a fluid form. Fluid vaccine lymph generally loses its activity in from five to eight days; it is not definitely known whether it is in consequence of peculiar processes of decomposition, or from physical conditions—coagulation of the lymph. Basing ourselves upon numerous experiments which we shall presently consider, we may assume that vaccine contagium is only in condition to produce its specific pustule and to reproduce itself when it comes in contact with a wounded part of the corium, while, according to experience, it remains inactive from the lungs,

the blood, or the sub-cutaneous areola tissue; otherwise every vaccinated man and vaccine diseased cow would be a centre for many infections. This declaration entirely corresponds to the results of the interesting experiments of Frolich, Senfft, and Chauveau. Frölich always retained positive results after vaccine inoculation of cows by punctures; but he could produce no variolæ eruption when he introduced the vaccine by sub-cutaneous injections, or by injections into the jugularis; but by the last experiments also the disposition to infection from vaccina was removed, as later inoculation gave negative results. Senfft received like results in that he received negative results from injecting vaccine lymph, pure or diluted, into the mammary vein or lymphatics of a calf; the same results followed like injections with the lymph from variola humana. Chauveau never saw a local or general eruption by cattle follow the injection of vaccine lymph into the veins; but although a negative reaction followed, the animals proved resistant to every successive vaccination. These experimentally proven differences are only, in my opinion, to be explained in one way, and that is that the contagium of vaccine only finds the conditions favorable to its development in the superior strata of the corium, while it probably suffers disturbances in the juices of the subcutis as well as in the blood. *It would be of much interest to know definitely if this important fact, which to my knowledge only posecesses an analogy in the artificial disease (Dorchsenchinz), produced in consequence of the cutaneous inoculation by pleuro-pneumonia contagiosa, repeats itself by subcutaneous or introveinous vaccinated men, and if such apparently resultless inoculations also gives protection against later vaccine infection or against variola humana.*

I can not pass by a very remarkable property of the contagium of variola humana and ovina; and this is, that inoculated, they both produce a far milder and far less lethal disease than when infection takes place in a natural manner. It is not at present to be decided whether this is owing to the manner the contagium gains access to the organism or not.

A very important but little observed property of the contagium of vaccina is that it is active even when extensively diluted,

(according to Rieter 1–1600), presupposing that the wound is large enough to offer a sufficient surface of contact for the dilution. The concentration of the vaccine and the size of the wound stand in opposite relation to each other. Hiller found a dilution in glycerine of 1–10 still active, and Chauveau received positive results with an aqueous dilution of 1–150.

With regard to the activity of the vaccine contagium in the blood of vaccinated persons, Hiller received negative results, but much depends on the manner in which the operation is performed, for we find other trustworthy authorities, such as Reiter, received positive results from inoculation made with blood of children which had been vaccinated eight days previously. The blood of a vaccinated child is also capable of infection when used in sufficient quantity. Zülzer has shown the same to be true for the contagium of human variola, Osiander and Furstenburg for that of ovine variola. Blood therefore offers a medium by which all parts of an organism become infected, whether the infection takes place naturally or from artificial interference, and we can therefore comprehend that the children of women who are complicated by variola during groviditas, may become infected during their intra-uterine existence, although we know that by other infectious diseases—anthrax, syphilis—the contagium circulating in the blood of the mother does not pass the placental septa. According to the period of groviditas in which the organism of the mother is complicated by variola will the child become infected intro-uterine, by which abortus is a frequent phenomena, or be born affected with the disease. This intra-uterine infection with the contagium of variola has been repeatedly confirmed by observation both by human and ovine variola, the young either being born with the disease or having upon them indications of having passed through the disease intra-uteral, and so remaining immune against either natural or artificial infection.

I have paid great attention to question if any which contagio are in condition when embodied in an organism to pass the placenta septa. In confirmation of observations previously made by Brenell and Davaine, I found that anthrax bacteria found an impassable septum in grovid animals affected with the placenta of

acute anthrax, and that it is in this manner that we are able to explain the phenomena, that the blood of the fœtus of such animals is free from these microparasites. Kassowitz has proven the same to be true with regard to the contagium of syphilis. The conditions in the acute exanthemata, variolæ, measles, scarlet fever, are exactly opposed to the above; the contagii of the same have the ability to infect the fœtus of the same.

For numerous very interesting and confirming cases illustrating the above, I must refer the reader to the original translation.

How does the contagium of vaccine deport itself in this relation?

After we know that in the greater number of cases the contagium of variola is in a condition to pass the placental septa, and that the blood of vaccinated organisms contain the contagion of vaccine, we may a priori assume *that the foetus of a successfully inoculated grovid organism becomes as a rule also infected.* When we look for proof for this assumption, we find but one case reported in the literature upon which we can depend, and that is from Underhill, who vaccinated, and successfully, a woman in the eighth month of pregnancy. Six weeks later parturition took place, and in the course of three or four months the child was very carefully inoculated with fresh lymph, but unsuccessfully. According to this example, the young of grovid females can be rendered immune against vaccine by inoculation of the grovid mother.

This intra-uterine infection comes to pass, in my opinion, much more frequently than we think, and the subject is in every way worthy of the most critical and statistical observation. Numerous cases are on record confirming our views in regard to the ovination of sheep, where the young of ovinated grovid ewes have remained immune from infection in every form for a certain period.

Conclusion:—Our considerations have brought us to the result that there are only two well characterised and idiopathic forms of variola, viz.: variola humana vera and variola ovine. By both we are able to prove the (present) origin, the first from variola-diseased men, the second from variola-diseased sheep.

Both forms are frequent; there is a constancy in the continuity of the individuals attacked, and deport themselves as other infectious diseases of man and animals. The variola of man belongs to the true epidemics, that of sheep to the genuine epizootics.

On the other side we have concluded that the remaining forms of variolæ among the domestic animals do not form idiopathic diseases, v. equina, vaccina (bovina), caprina, porcina, and canina, as they descend directly from one or the other of the above named protopathic forms, but may also at present take their origin reciprocally from one another. The most general characteristic for these deuteropathic forms of variola is that they appear unfrequently and never in epizootic form, generally more isolated or as enzootics limited to single stables or herds.

We are at present unable to decide in what relation variola humana and variola ovina stand to each other, if one originally proceeded from the other, or which is the true original variola. Experimental pathology, which we have to thank for so many brilliant results, has here an open and profitable field for further work. At least there is scarcely a doubt, and I here endorse in full the views of Bohn, that the reciprocal transmissability of the different forms of variola as well as the reciprocal substitution, vicarisation—"Stettvertretung"—of the human and animal variolæ indicate that at the foundation we have before us an identical contagium, and that the variolæ have sprung from a common matrix and are related to one another; as an individual inoculated with variolic contagium peculiar to another species is rendered non-susceptible not only against infection from its own peculiar form, but from that of other species, for a variable length of time. The probably originally identical variola contagium exerts a very different influence by the different zoological species, although in its principal effects it retains a certain degree of conformity. In this direction it presents a striking example, that contagii have to a certain degree the ability to conform themselves to the organisms in which they gain access—the manner is of no consequence—and thereby deport themselves consequently to the variations of the natural historical species, which pliable and capable of adaptation, a property which does

not oppose the organic nature of these infectious elements.

We have further shown that the bovine variola, v. vaccina, cannot be considered as a genuine or original form of variola, and that in all probability it takes its origin either in v. humana, or, at present, in humanised vaccine, and finally I have called attention to the fact that under certain conditions the fœtus is accessible to intra-uterine vaccination by timely vaccination of the mother, and that theoretically and practically proven fact is well worthy of further consideration and proof.

[The above hurriedly-made translation of the greater part of this very excellent contribution to pathology will, I hope, be found very interesting to the readers of the Review. I say hurriedly made, for those who know the work the translator has on his hands, must know that everything he at present does is forced; so I beg pardon for any ambiguity of expression, and make myself responsible for all mistakes except those of the unfortunate "chap" who sometimes rules in the printing office.—B.]

ANATOMY OF REGIONS.

Translated from Peuch and Toussaint, Precis de Chirurgie Veterinaire, by A. Liautard, M.D., V.S.

Continued from Page 207.

MEMBRANA NICTITANS.

The functions of this little apparatus, its position in front of the eye in the cases where this organ is drawn back in the orbit by the muscular contractions, made it to be called the *third eyelid.* Indeed, it fills the part of an eyelid, having, like them, for duty, to protect the essential organ of vision and to remove from it foreign substances which may accidentally come in contact with it; the membrana nictitans is only visible outside, when this last function is to take place, or when an external cause threatens the

occular globe. In the ordinary state, the membrana nictitans is concealed in the great angle of the eye, its anterior border only being visible; but if a permanent contraction of the muscles of the eye draws it back in its orbit, or when this action is stimulated by a foreign body, the membrana nictitans shows itself under the shape of a thin lamella, convex on its external face, concave on the internal, wide at its anterior part and narrow at its posterior, thus assuming the shape of a triangle, whose posterior angle is much elongated. In the motion described above, the third eyelid glides between the two palpebral veli and the globe of the eye, as in two grooves represented by the conjunctival fissures; these give it its directions; without them it would look upwards. Except in the case of permanent contraction of the muscles, as in tetanus, the action of the membrana nictitans is instantaneous, and it soon returns in the nasal angle of the eye.

The angular extremity of the membrana nictitans is united to a large adipous cushion situated between the muscles of the eye; its projection forward then is only an action entirely mechanical. Indeed, in the retraction of the eye in its cavity, there is pressure upon that cushion, which has a tendency to change position, and pushes forward the membrana nictitans, which rests upon it; its action is therefore so much more complete that the contraction of the muscles is greater. In this motion the third eyelid carries with itself the conjunctival fold which surrounds it. It is this same fold with adipous tissue which covers the internal angle of the eye in case of contraction; for its adherent angle would be too narrow to reach this result without the existence of this extra apparatus.

The membrana nictitans may be affected with an ulcerative inflammation which may extend to the cornea.

Differences.—The membrana nictitans is so much more developed that the number of digits is smaller. In its greatest development in solipeds and ruminants, it becomes less voluminous in the pig, smaller still in carnivorous. The third eyelid of birds must not be taken for it.

ORBITAL CAVITY.

In the skeleton this is reduced to an opening situated on the

limit of the anterior and lateral faces of the head, on the line with the separation of the cranium and the face, completed behind by a fibrous apparatus called the *ocular sheath ;* this last, which separates the ocular apparatus from the temporal fossa, belongs, also to the orbital cavity.

The anterior opening of the orbits is turned outwards and slightly forward; its form is that of a circle, somewhat depressed sideways, and also a little from above below. Thus it resembles a rectangle, whose sides have been united by wide curves instead of sharp angles. The greatest dimension of the orbital opening extends from the orbital apophysis of the frontal to the zygomatic; it is consequently perpendicular to the palpebral fissure and about one-sixth longer than the transversal diameter The bones which form it are the larymal for the inferior anterior angle, the frontal for the internal and superior side, the zygomatic for the inferior and external. The extremity of the zygomatic process of the temporal, in reaching between the orbital portions of the frontal and the ascending process of the zygomatic, co-operates to the formation of the external sides.

The bony wall of the orbital cavity is complete only on the internal side; outside its form is that of a wide ring, measuring between two and two and a half centimeters. It presents, at the supra-internal angle, the supraciliary foramen, which gives passage to an arteriol and to a division of the ophthalmic branch of Willis ; inside and above, a depression lodging the curve formed by the great oblique muscle, when reflecting itself upon the fibrous band which is attached on the border of that depression ; at last, in the infero-internal angle, a deep fossa ending by a canal, hollowed through the larymal bone and receiving the larymal sac, and the canal rising from it.

The bony wall of the superior face and the external side, is extended posteriorly by the *ocular sheath.*

This is a fibrous membrane, horn shaped, whose summit is attached to the edges of the orbital hyatus ; it is fixed forward upon the bones already named, mingling with their periosteum. It is strong and thick in all the external part which has no bony base to rest on ; on the internal side it is thinner and lays against

the frontal. It presents several openings for the passage of blood vessels and nerves ; is surrounded by a somewhat thick layer of adipous tissue, which separates it from the surrounding muscles and from the coronoid process of the maxillary, which might pinch it during the motion of the jaws. In its interior are found the globe of the eye with its muscles, the blood vessels and nerves of the eye.

Differences.—In *ruminants*, the anterior opening of the orbital cavity is formed by the frontal, larymal and zygomatic bones. The process of the temporal does not extend as far as the orbit. This opening is notched on the internal side, where the frontal and larymal unite ; the supra-inferior diameter is more developed than the transversal ; the orbital foramen, more developed, is situated more backwards and inwards ; simple at its internal orifice, it divides and opens on the anterior face of the frontal by one, two, or three orifices.

In dog, and generally in carnivora, the orbital process of the frontal does not unite with the zygomatic arch. In its place is a strong ligament upon which the antero superior border of the ocular sheath is attached.

The orbit of the pig is like that of carnivora.

MUSCLES OF THE EYE.

They are situated in very deep position. I am not aware that operations of myotomy, so common in human surgery, were ever performed upon animals, as in case of strabismus, affections which are very rare in large domestic animals. Few cases are recorded. I have seen one in the dog, and Mr. H. Bouly has observed one in the horse.

The muscles of the eye form two layers round the optic nerve; the most external is constituted by the *straight* muscles, divided into superior, inferior, external, and internal, and having common characters. They are little fleshy bands, thin on the borders, by which they are all more or less united. The separated contraction of each of these muscles carries the ocular opening on the side of the muscle in action, either above or below, outward or inward, and even in intermediate positions if they contract two by two.

Inside of this first layer, one finds another, formed like the first of four fasciculi, united by their borders; the mass of

these is called the posterior straight. Its presence is related to that of the membrana nictitans, as it is missing in animals where this organ is absent, especially in monkeys and man; it is principally the contraction of this muscle which draws the globe towards the bottom of the orbit and produces the projections of the membrana nictitans. A thick adipous tissue, united to this organ, rests between these two muscular layers and also between the deep layer and the optic nerve.

Let us also mention the oblique muscles which allow the motions of pivoting of the eye when the head is inclined laterally; the superior oblique, or great oblique, which, from the bottom of the ocular sheath, reflexes itself upon a small tendon attached on the internal side of the orbit, hence to the superior face of the eye. The internal oblique rises from the internal face of the orbit and goes to the superior face of the eye. These muscles are antagonistic of each other when examined on the same eye, and on the contrary antagonistic of that of the same name in the opposite eye, when the parellelism of the axis must be maintained as in the case of lateral inclination of the head.

The elevator of the superior eyelid is also lodged in the ocular sheath, altogether on the internal face above the superior straight.

Numerous blood vessels are distributed to these muscles or run through them so as to reach the globe of the eye.

Amongst them we will mention the ophthalmic artery, an orbital branch, the supraciliary and central arteries of the retina. A large vein, the alveolar, runs through the ocular sheath to empty into the cavernous sinus; it establishes communication between this and the glosse-facial, with which it unites on the anterior border of the masseter near its superior insertion.

Nerves are numerous. We have the nerve of first pair, or the optic, functional nerve of the eye; that of the third pair, common ocular motor, going to the superior, posterior, internal and inferior straight; the pathetic which goes to the external straight. And then the ophthalmic of Willis, which carries excessive sensibility to all the parts of the eye, in connection with the orbital branch of the maxillary nerve.

(*To be continued.*)

EDITORIAL.

Amongst the progress made for the last few years in the appliances for the diagnosis and prognosis of disease, the application of the thremometer must take a first rank.

Indeed, it is only a few years since, that the use of this instrument by physicians first, and afterwards by veterinarians, was called into extensive and general practice.

American veterinarians were not the last to see the benefits to be derived by the use of this little instrument, and though many old practitioners smiled at the idea of the *new toy*, as some called it, it soon became, in the hands of the conscientious observer, an excellent means of assistance, and it soon was found, that both the practictioner, as well as the student, could scarcely do without their thermometer.

True, its use has been overstretched and often misplaced, specially by young practitioners, who in many instances no doubt, have applied it when there was no need for it, and many young graduates will remember forgetting it in the cavity where it was placed, and when returning to find it in the bedding or amongst fæces broken in many pieces; but with all that the thermometer has established its place in the general practice of medicine, and to-day it is rare to read a report of a case without careful observations of the temperature.

We give our readers in this number of the *Review* the beginning of an article on thermometry, translated from the French by Mr. G. A. Banham, M.R.C.V.S., who is now completing his studies in Germany, and also a copy of the table which is used by many practitioners to record the variations which are to be noticed during a disease. These tables can be printed and bound in book form, and thus careful record be kept. As it is yet a new study, much remains to be done in the history of the application of the thermometer, and every veterinarian may in his own practice help to build up positive data which, every one will

see, will become most essential in the diagnosis, prognosis, and treatment of diseases.

At the request of the Secretary of the United States Veteri nary Medical Association, we publish the notice of the annual meeting of the Association, an occasion of which we have no doubt, every member will take advantage and be ready to answer the roll call.

THE GERMS THEORY.

ITS APPLICATION TO MEDICINE AND SURGERY.

By M. M. Pasteur, Chamberland and Joubert.

Translated by A. Liautard, M.D., V.S.

CONTINUED FROM PAGE 222.

The numerous cultivations of the septic vibrio that we had to make, allowed us to verify curious facts concerning the natural history of microscopic organisms.

One of the liquids that we used was the extract known as Liebig's bouillon, diluted in ten times its weight of water and neutralized or rendered slightly alkaline and warmed to a temperature of 115° for fifteen minutes, thus rendering it entirely imputrescible to the contact of pure air.

We have said that the septic vibrio is formed of small moving little threads. This is particularly its appearance when collected in the abdominal serosity or muscles of dead septicemic animals; but it is often associated, specially in muscles and particularly those of the abdomen, with very small, generally immovable bodies having a lenticular form. These carrying sometimes at their extremities a corpuscle germ, remains to us for a long time a puzzle and a mystery. We have learned, however, by our trial in cultivation that they are nothing else than one form of the septic

vibrio. Sometimes the little lenticular body ends on one side with an elongated appendage, assuming the form of the tongue of a bell. We have also seen the septic vibrio with the form of little sticks extremely short, very minute; but what is most surprising, is the facility with which the septic vibrio may reproduce itself without showing the slightest motion, losing then a certain amount of its virulency, but never being entirely harmless. For a long time, we even believed that we had two or more septic vibrios of different forms or virulency, and that by our cultivation we had obtained separations, more or less complete, of each of these different vibrios. It was not so. We have found in *septicæmia proper* only one vibrio, which may change in aspect, in facility of propagation, in virulency among the liquids where it is cultivated.

The best proof that we have had, in our numerously repeated experiments, only one vibrio, is that the last cultivations were brought back to their power of virulency of the beginning by changing the liquids of those cultivation. Let us reproduce ten, twenty, thirty times in succession, the septic vibrio in Liebig's bouillon, and to this let us substitute bloody serum containing few fibrinous clots, the new culture will furnish a powerful septic vibrio, killing at a 1-2000 of a drop, and the blood and serosity of the animal thus killed will possess at once a power of virulency much higher with the forms and methods of the septic vibrio.

From the preceding facts let us remark how premature are, in the present state of our knowledge, the classifications and nomenclatures proposed for beings which may change in aspect and properties, as much as we have shown through external conditions.

In the study of microscopic beings, any method is precious, if by it one may succeed in separating from each other numerous species whose association is so common. The properties of the ferments living without air, placed us a moment ago on the discovery of one of those methods. I mean to say of the cultivation in the vacuum, opposite to the one made in presure of the atmospheric air. How many aerobic germs are mixed with those of an anerobic organization, cultivation in vacuum will allow us to separate them. It will be the same for a mixture of germs

altogether aerobic and anerobic. By applying this method, by associating it with others already known, sometimes taking advantage of good opportunities, as are sometimes met in long researches, we have found that the atmosphere and water, those immense reservoirs where all microscopic remains of what lived are gathered, contain numerous species of aerobics and anerobics. Without entering in the details of our observations, we may say in a general way, that the inoculation of these organisms often bring on fatal disorders, which even seem to constitute diseases as new by the specificity of their actions, as by the nature of the inoculated organisms. For instance, the septicœmia of which we spoke a moment ago, is not the only one. Air and water contains the germs of a vibrio a little bigger in diameter than the septic vibrio, more rigid, less flexuous and with slower motions. We will describe its effects in another communication.

The following experiments show again another method of separation of microscopic germs. In few points it resembles the one already spoken off.

Let us take a piece of meat of stated weight; say the leg of a large mutton, and after singeing it rapidly over its whole surface, let us introduce in the thickness of the tissues the blade of a bistouri also singed; in the opening thus made, drop a few drops of common water and insert over it a little ball of wadding which has been exposed to a current of air from the street; then cover the leg of mutton with a large glass cover. Again renew the same experiment with another leg of mutton also singed, and some drops of water throughly deprived of living germs by being warmed to 119° to 120°.

If one considers that the muscular tissue absorbes oxygen easily in throwing a volume about equal of carbonic acid, one will easily understand that our drops of water may be considered as having been soon protected from atmospheric air, in presence of an element of cultivation, favorable to the development of some germs. Besides, it is easy to fill up the glass globe which covers the leg of mutton with pure carbonic acid gas.

Here is the result: after one or at the utmost two days, with a temperature of 39° to 40° the gigot with the pure water shows no

microscopic organisms in any of its parts; on the contrary, that with common water, even if it had received but one drop of river water, and more so, if of sewer water, contains in each part of its whole and in all points of its periphery, anaerobic vibrios more or less rapid in their motions and in their propagations.

The experiment is more remarkable yet when a drop of culture of vibrio, pure and free from mixture, has been deposited in a central portion of a piece of meat. The septic vibrio, amongst others, penetrates and multiplies with such a great facility, that each microscopic part of the muscles shows it by myriads as well as the germ corpuscles of this vibrio. The meat, in those conditions, is all gangrenous, green on its surface, swollen with gases, and is easily crushed in giving a sanious repulsive pulp. How powerful, though indirect, this demonstration is of the vital resistance, or to use an expression more vague and still clearer, of the influence of life to overcome the consequences—often so disastrous—of surgical wounds! That water, that sponge, that charpie, with which we wash or cover a wound, depose upon it the germs which, we see, have an extreme facility of reproduction in the tissues and would kill many operated, in a very short time, if life would not resist the multiplication of these germs. But alas! how often this vital resistance is powerless, how often the constitution of the patient, his weakness, his moral condition, the bad applications of the dressing, oppose but an insufficient barrier to the invasion of the infinitely small with which its wound has been, unknowingly, covered! If I was a surgeon, impressed as I am by the dangers which would rise from the germs of the microbis thus spread upon all the objects, particularly in the hospitals, I would not only use instruments of perfect cleanliness, but, after having washed my hands most carefully and exposed them to a rapid singeing—which is without inconvenience—I would have all the charpie, all the bandages, and the sponges first exposed to a temperature of 130 to 150 degrees, and would only employ water which had been exposed to a heat of 110 to 120 degrees. All this is practical. In this manner, I would have to fear only the germs in suspension in the air all round the bed of the patient; but observation shows

us daily that the numbers of those is almost insignificant when compared with that of the dust on the surface of the objects and in the common waters, even in the most clear. And, besides, nothing would prevent the use of the antiseptic manipulations, which, united to those that I indicate, could be considerably simplified. A phenic solution, even very weak and consequently without inconvenience by its action upon the hands of the operator or for his respiration, could be advantageously substituted for strong carbolic solution.

This subject is too important for the Academy not to give me a few moments more of attention to allow me to particularize more and to go into more precise details, if possible, upon the dangers of death after amputation, or even after some simple operation, as we know of several deaths having taken place after venesection.

I will speak of a vibrio which has not yet been noticed, and whose properties throw new light upon the subject which occupies us and upon that great rock of surgery—the purulent infections.

When one take as seed for cultivation in the vacuum some drops of common water, it may happen that it contains only one kind of organism, as common water often contains unique germs when taken in very small volume and as seed for a given culture. This is another previous mode of separation of germs, by-the-way; but, to cut short, I will not stop at the proof of these assertions.

If one multiply cultures thus made with different common waters, he often meets the vibrio I am speaking of, and which presents the following characters*: It is a being at the same time ærobic and anærobic; in other words, cultivated to the contact of the air, it absorbs oxygen and returns an equal volume of carbonic acid gas without formation of hydrogen gas. In this condition it is no ferment. Cultivated, on the contrary, in the vacuum or on pressure of carbonic acid gas, pure, it multiplies also, not without giving this time a true fermentation with formation of carbonic acid and hydrogen, as long as life is carried on without air. It is a new confirmation of our prin-

* At present, with the water which feeds my laboratory, fifty times in one hundred, almost, this result is obtained.

ciple: *fermentation accompanies life without air;* a principle which, I am persuaded, will one day predominate all our knowledge upon the physiology of the cell.

In the first hours of the development of our vibrio, whose rapidity, especially to the contact of the air, is very great, it has the form of small bodies, very short, whirling upon themselves, turning and waddling about, soft, gelatinous and flexuous, which are easily seen. Soon all motions cease, and then they exactly resemble the *bacterium termo;* like it, it is slightly narrowed in its length, though it is essentially different from this bacterium. If you inoculate a few drops of the culture of that organism under the skin of a guinea-pig or of a rabbit, pus will soon form and be detected after a few hours. The following days an abscess is formed, and in this a great quantity of pus is found. This, it may be said, has nothing surprising, as we know that, in the state of our knowledge, any solid object, fragments of coal, of wool, all give rise to suppuration.

I will add even that these last experiments have been made by us, with materials first warmed and free from microscopic germs; but the activity of our microbe, considered as a generator of pus, should he even enjoy this power only as a solid substance, is noticably increased by the fact of its possible multiplication in the body of animals.

To satisfy us, the following experiment will suffice: A culture of this organism is divided in two halves—one is warmed to 100 or 110 degrees; the microbe is killed, without alteration to its form or size; these equal portions of the two liquids are inoculated into two animals alike. It is easy to observe that the inoculation of the liquid which has not been warmed up gives rise to a greater quantity of pus than the other which produces it as an inert body would. Let us suppose that if the pus obtained from these two animals are separately cultivated; that the one which comes from the animal which has been inoculated with warmed organisms, remains perfectly sterile, while the other, which has received the non-warmed organisms, reproduces this easily and abundantly.

At any rate, here is a new microscopic organism which may

live in the body of animals. We knew the carbuncular bacteridie and the septic vibrio, agents of contagion, of disease and death, not because they give rise to chemical poisons, but because animal economy can be their center of cultivation. We have now a third kind, also able to multiply itself in the living body, and to give rise to a pathological state different, we have seen, from the morbid manifestations which follow the inoculations of the carbuncular bacteridie or the septic vibrio. It is proof that the pus formed by the organism is related to the specificness of its structure. The quantity of pus, for instance, produced by the bacteridie and the septic vibrio, all the points of inoculation or any where else, is so little that it is often overlooked.

Does our new microbe when inoculated, remain confined under the skin at the point of inoculation ?

Can it like the bacteridie or the septic vibrio, spread itself in the whole body when once under the skin ? Experiments answer affirmatively. This microbe can propagate into muscle, penetrate into the blood, in the lungs, in the liver, and give rise in these organs to the formation of purulent collections, metastatic abscesses, in one word to purulent infections and death. This invasion of the whole body is, however, more difficult than by the carbuncular bacteridie or by the septic vibrio. While inoculation of the smallest quantities of these last organisms will bring on, so to speak, sure death ; that of our microbe in equivalent proportions, will only produce abcesses which get well, either because they ulcerate of themselves or because the pus is absorbed, and the microbe disappears, defeated by what I called a moment ago, the life, the vital resistance, the *natura medicatrix*. However, if one increases by the number of the inoculations the number of the abscesseses, it frequently happens that the cure of those cannot take place, and it is then that the microbe penetrates every where, and that the muscles and the liver are impregnated with them.

We have said that the new organism, first warmed up to a temperature of 100 to 110 degrees, and entirely deprived of life, though keeping its form and size, gives rise, when inoculated under the skin and like other inert solid bodies, to abscesses formed by an ordorless, pure pus which is free from microscopic

living organisms. This mode of inoculation has not allowed us yet to produce abscess in the viscera. But, as well as in injecting directly in the blood inert bodies, one may stimulate the formation of metastatic abscesses, as well is it easy to obtain similar abscesses either by the living or dead microbe, by injecting them into the jugular vein.

In this case the lungs, and principally the liver are filled in twenty-four hours with large numbers of metastatic abscesses in all stages of developement, from the simple inflammatory spot to the smallest white pustule filled with pus; but in the point of view of cure, that is the disparition of the abscesses, the facts are different in the two modes of inoculation. Often the animal inoculated with the living microbe, dies rapidly, and any portion of the liver and lungs sown in an inert liquid, will reproduce the microbe. If the sequelæ of the inoculation is not fatal, the disappearance of the abscesses and of the microbe in the viscera is slower than in the case of the animal inoculated with the dead microbe

But we must from the preceding experiments remember that the pus, loaded with microscopic living beings, whose life may go on in the animal economy, brings on greater disorders and more difficult resorption than what we understand generally by pure pus.

We have given in the proof of a prevalent infection localized in viscera, and produced by foreign bodies or by pus entirely free from living organisms, a queer coincidence. A foreign body brings on suppuration; the globules of pus have the same power. Metaphorically speaking we may say: pus engenders pus.

If I had time, I would go on and describe the resorption of metastatic abscesses. It is a phenomena curious to follow in its details, and in which, what is most interesting to observe, is the facility with which nature rids itself of the prevalent collections which are sometimes so numerous in all the lobes of the liver.

There is another part of our studies which I would like to present to the Academy—that is, the formation proper of the pus. But here we arrive at results so contrary to those admitted in scientific circles, and it is so difficult to come to a conclusion in these very delicate researches, that I may postpone this demonstration to another time. For us, actually, the red corpuscles of

the blood are the ones which form the pus corpuscles, by a pure and simple transformation of the former into the latter. But in sciences *of observation*, so-called, the illusion is so easy, that one remains satisfied with the observation.

There remains one point which deserves the attention of the surgeon: this is the effects of our microbe, generator of pus, when associated with the septic vibrio. Nothing easier than to suppose, so to say, two distinct diseases and to produce what might be called a *septicæmic purulent infection* or a *purulent septicæmia.* While the microbe generator of pus forms, when alone, a white, thick pus, slightly yellow or blueish, odorless, diffused or surrounded with what is called a *pyogenic membrane*, and without danger if specially localized under the cellular tissue, ready, we might say, to be promptly resorbed; the smallest abscess, on the contrary, that is produced by this microbe associated with the septic vibrio, assumes a gangrenous, putrid and greenish aspect, and seems infiltrated in the softened tissues. In this case the microbe generator of the pus, mixed up with the septic vibrio, penetrates with it in all the tissues; even the muscles become inflamed, full of serosity, showing sometimes pus corpuscles here and there, and seemed to be filled with two different organisms.

By an analogous method the effects of the carbuncular bacteridie and of the microbe can be combined, and thus two different maladies be superposed, viz: a purulent anthrax or a carbuncular purulent infection. However, one must not exaggerate the predominancy of the actions of the new microbe over that of the bacteridie; if the microbe is mixed to the bacteridie in sufficient proportion, it may destroy it entirely—that is, prevents its multiplication in the body. Anthrax then does not appear, and the trouble, remaining all local, is only an abscess of easy cure. The microbe generator of pus and the septic vibrio being both anærobic, we understand how one—the septic—would be interfered by the other. Nutritive elements, solid or liquid, are always plenty in the organism for so small beings; but the carbuncular bacteridie is exclusively ærobic, and the proportion of oxygen in every point of the body is limited

to some extent; at least many circumstances may diminish it or remove it entirely, here and there, and as the microbe is also an ærobic being, it being in greater number, it will take off a large amount of the oxygen necessary to the development and life of the bacteridie. No matter, however, what the explanation of the fact may be, it is certain that the microbe referred to in this paper prevents, in some circumstances, the development of the bacteridie. Last year we met with one fact entirely like the above.

To resume, one sees from the preceding details that one may produce at will purulent infections free from any putrid element, putrid purulent infections, carbuncular purulent infections, various combinations, different sorts of lesions according to the proportion of the specific microbes introduced in the organism.

Such are the principal facts that I wished to present to the Academy in my name and those of my assistants. This lecture is the demonstration of a series of propositions which I presented to you some time ago.

Some weeks past, one of the members of the section of medicine and surgery—Mr. Seidllot—after long thought, stated that he had no hesitancy in saying that the success, as well as the failures, in surgery would find a rational explanation in the principles upon which the *germs theory* rests, and that this would give birth to a new surgery, already inaugurated by a famous English surgeon—Doctor Lister—who, one of the first, appreciated its fruit. Without professional competency in the subject, but with the conviction of the satisfied and authorized experimenter, I would dare here to repeat the very words of our illustrious confrere.

EXTRACTS FROM FOREIGN JOURNALS.

By A. Liautard, M.D., V.S.

Rupture of the Uterus before delivery—General putrid emphysema of the Fœtus.

Cow, eight years old, which for several days is ailing, appetite somewhat diminished, the forerunning symptoms of delivery are well marked, at times slight colics and efforts at expulsion.

The causes of this condition are unknown, time of gestation is supposed to be passed for several days.

General condition.—Prostration, anorexia, diarrhœa, artery soft and small, pulse quick and weak, respiration quiet, thick, abundant and yellow greenish mucous through the vulva, neck of uterus is close, a fœtus well developed and immobile is felt through the walls of the rectum.

The next day, general condition more satisfactory, no diarrhœa, appetite better, three fingers can be introduced into the os uteri.

Diagnosis.—Probable death of the fœtus; prognosis, cautious.

Treatment.—Abortive drench of oz. ii of ergot; without result. The next day, increase in the symptoms, animal is lying down, very tympantic, respiration increased, pulse very quick and feeble, entire loss of appetite. The os uteri is sufficiently open to allow the introduction of the hand, which then brings out some thick, offensive mucosities. The patient is very weak and dies during the manipulations for the extraction of the fœtus.

Autopsy.—Large effusions in the abdomen of a thick, bloody fluid of an infect odor, with blackish clots of various forms, size, and consistency; a great part of the fœtus is out of its natural cavity and rests on the rumen and intestines; the fœtal envelopes are torn and in a putrid condition; the displacement has taken place through a wide solution of continuity between the uterine horns and extending over the superior and inferior face of the organ; another smaller opening is found also at the junction of the lateral and superior face of the left horn. These wounds have irregular edges, somewhat smooth and infiltrated with blood. In the largest laceration, the two layers, muscular and mucous, have an uneven size; the former being retracted, the mucous forms alone the free border of the opening. The fœtus was enormously developed by the infiltration of both liquid and gas through the cellular tissues.

The general emphysema of the fœtus is one of the causes of dystocia which had been heretofore unnoticed.

—*Annales de Bruxelles, April.*

CÆSARIAN OPERATION IN THE SLUT.

In the "Annales de Bruxelles," Professor Degive remarking how few cases of *abdominal hysterotomy* are on record, reports three cases where he performed it with success.

The first was a slut at term, which had been in pain for twelve hours. Vaginal exploration revealed the presence of a fœtus at the dilated os uteri, but unable to pass on account of the narrow pelvic passage. The operation performed, four pups were removed. The mother and two of the little ones lived.

In the second, a water spaniel slut, small size, was in pain for twenty-four hours. She had delivered with difficulty, a dead fœtus; another was engaged in the uterine opening. In trying to extricate it, the head, with the two anterior legs, were pulled off. Unable to reach the remaining, hysterotomy was performed and the trunk and hind legs of the fœtus were removed. Weak for several days after the operation, she made a perfect recovery.

The third was a slut bought for experiment on castration. When ready to be operated, the horns of the uterus were found to contain each two embrios of the size of a large nut. The four fœtus were removed by incision of the uterine horns, and ten days after the slut had entirely recovered.

PROLAPSUS RECTI IN THE DOG—NEW MODE OF REDUCTION—INDICATION AND VALUE OF GASTROTOMY.

Danish dog, small size, presenting the symptoms of a *prolapsus with invagination* of the rectum. The reduction was difficult but secured with a cross suture. Towards the third day this being removed, the difficulty reappeared. Second reduction, second suture, second failure. The organ being then carefully pushed back with a smooth wood speculum, a third reduction was made with another more secured suture. A third failure was the result. It was then decided to open the flank and act directly upon the organ itself. The abdomen was opened, the rectum pulled back to its place and the anus closed by the same suture used in the third attempt. The dog got well and remained so for fifteen days, when the difficulty returned. Many other means were also put in

practice, but all failed, and death ultimately took place after two months of treatment.

In conclusion the author points out the immunity of gastrotomy, mentions cases where in cattle, and even horses, the abdominal cavity has been open for the reduction of invagination of parts of intestines or the removal of calculi, etc., and asks if the operation is by itself as serious as generally considered, and if it would find a justifiable indication in certain cases such as foreign bodies, lesions of connection and distocia.—*Annales de Belgique, August.*

HYDROPHOBIA IN A BROOD MARE.

A mare, eight years old, with sucking colt of two months is one day taken sick, worries and seems to have violent colics, which soon pass away. The following evening she presents the same symptoms, but more marked. When examined by the veterinarian, she seemed very excited, turned continually in her stall, does not attempt to bite or kick; her eyes are very bright, and look as amaurotic; she obeys the voice of her owner and allows her colt to take the breast without noticing him; she refuses all food. Ordinarily of a quiet disposition and lymphatic, she is very excitable. She energetically rubs herself right and left on the withers and ribs, which are already swollen and much bruised.

This lasted several hours and was followed by a state of quietude. The colt was taken away, and the mare kept by herself.

The next morning she was paralyzed, and died several hours later.

On inquiry, it was found that eight months previous she had been bitten by a mad dog.

The points of interest are the incubation of the disease, the fact that the mare was nursing her colt over two months when the disease showed itself, and that this colt is in perfect health, and has never shown any bad effect from the milk she took from her dam.—*Journal de Zootechnie, Lyons.*

REPORTS OF CASES.

COMPLICATION IN SEVERE LARYNGITIS,

Viz.: Escaping of Fluids (water or gruel) through an Abcess in the Inter-Maxillary Space while in the act of Deglutition.

BY G. P. PENNIMAN, D.V.S.

The patient, a grey mare six years of age, came for treatment April 22d, showing considerable difficulty in breathing and inability to eat or drink; swellings in the inter-maxillary region, and some local irritation of the skin under the fetlocks. Later, the skin sloughed from these parts, leaving unhealthy-looking surfaces.

The usual treatment for laryngitis was pursued, but upon the 25th, respiration was so labored that tracheotomy was performed.

27th. Inferior cervical and a portion of the pectoral regions were much swollen and hard, but the breathing was easy through the tube.

28th. Dark or chocolate-colored pus had worked from an abcess in the inter-maxillary space beneath the skin down to the point where the tube was inserted, and there escaped. The abcess was then opened.

29th. The animal succeeded in swallowing a little water and soon after coughed from the mouth a tea cup-full of pus.

30th. Some improvement, but in *drinking gruel or water* (which she did more readily) a portion of it *would escape* from the abcess in the inter-maxillary space and from beneath the skin at the point of insertion of the tracheotomy tube.

She continued to improve. The extensive swellings diminished faster than was expected; only a stimulating lotion, with palma friction, being used for them.

May 2d. The tube was removed and the wound appeared healthy. Those of the fetlocks were better, but were quite tardy in healing. No further escape of fluids was noticed.

She improved rapidly from this time, and upon the 20th was turned to pasture and has entirely recovered.

COMPARATIVE SURGERY—PROLAPSUS RECTI IN A MONKEY—AMPUTATION.

By A. H. Rose, D.V.S., House Surgeon.

On July the 4th, there was brought to the hospital of the Veterinary College a male monkey about three years old and of good health, with the following history:

He had eaten a large amount of cherries (with the pits) which had given rise to much uneasiness, straining and tenesmus; the rectum was pushed externally, with inability to return to the pelvic cavity.

Symptoms.—Animal suffering much pain; rectum protruding about two and a-half inches and dark in color, very offensive, in fact, in a state of gangrene; loss of appetite; animal much dejected and wanting to lie down all the time.

Diagnosis.—In consequence of the condition of the patient a diagnosis was made easily, with an unfavorable prognosis, on account of the extent of the lesion and of the delicate nature of the little patient.

Treatment—The portruding portion of the intestine was grasped in the ecraseur and about two and a-half inches was excised, with no hemorrhage, and dressed with carbolic solution; buckthorn syrup ℥i was also administered, with directions to feed on food of a laxative nature.

5th inst. Animal lying down most all the time, and seems very much dejected; will not eat voluntarily, so had to be fed on milk, Oj during the day.

6th inst. Animal a little brighter; will eat only by compulsion, in which manner he received during the day of milk Oiss; not much change in the fæces as to purgative action.

7th inst. Buckthorn acting as a purgative; animal eating a little milk of his own accord; does not want to lie down so much.

8th inst. Animal eating better, and he seems much brighter in every manner; still purging very nicely, and no pain in passing his stools.

9th inst. Still purging nicely; animal much brighter and more lively; eating of his own accord from Oj to Ois of milk a day.

10th inst. Purging stopping; eating anything you will give him; improving in every manner.

12th inst. Still improving; so much as to be able to go home at any time.

13th inst. Discharged free from all trouble, with orders to feed on laxative food for a week or ten days to come, so as not to irritate the rectum.

Aug. 20th. Is reported as mischievous as ever, and none the worse for the loss of its rectum.

CALCAREOUS GROWTHS ON THE CHOROID PLEXUSES—ENCEPHALITIS—DEATH.

By R. A. McLean, Student.

The subject of the following report was a bay gelding, nine years old, the property of Mr. Jacob Sapp, who had bought him on the 8th of August, to be used to a business wagon. On the 9th, at 3:30 A. M., Dr. Coates was called, and on arriving at the stable found the horse lying down, and got the following history:

The horse was bought the day before, and driven, going, the owner said, all right, and on being put into the stable was fed, showing no signs of sickness. At 3 A. M. the owner was awakened by hearing the horse kicking, and on visiting him and finding him down and unable to rise, called the doctor, who, on arriving, endeavored to get him up; but although he would rise a little he would fall back again, as if paralyzed behind, always falling on his left side. The pulse was full and soft, about 44; respiration 12 and temperature 101½. On pricking him along the back and legs he showed sensation, and at last got up. On introducing a cateter, about six pints of urine were withdrawn, normal in appearance, and acid. In endeavoring to back him out of the stall he kept his fore legs stretched as in laminitis, his hind legs moving feebly; but after considerable effort he was got out and walked a little, with a swaying motion, but with perfect freedom of the extremities. He was offered some grass, which he took, chewing it a little and retaining it in his mouth. He rested his lips on the manger and looked very drowsy.

The diagnosis of encephalitis with a doubtful prognosis was made. He was ordered to be sent to the hospital, where he was admitted at 11 A. M. In walking the distance from his stable to here (four blocks), he swaggered very much from side to side, lifting his fore feet high. He was placed in a box stall and bled till seven quarts were obtained. Pulse then 63 and small; respiration normal. ℨ vii of aloes were administered and he received a rectal injection, a little hard fæces being taken away, this to be repeated three times a day, and a cold water douché ordered to be applied to his head, which after four hours was replaced by the application of ice to the pole and head.

At 6 P. M. animal still drowsy and restless; pulse 39, full and soft; respiration 13; temperature 101. A small quantity of very hard fæces has been passed. He has taken no food, except a little sloppy bran mash. August 10th, 7 A. M., pulse 46, soft and full; respiration 30; temperature 102. Animal still very drowsy, but not quite so restless; legs ordered to be bandaged and the rectile injections and application of ice to be continued, the patient to be fed on low diet. At 12 noon gave ℥ vi of sulphate of soda. At 3 P. M. a small quantity of soft fæces were passed, but animal not yet purging. At 6 P. M. pulse 36, full; respiration 15; temperature 103. Bowels are now working and injections ordered to be discontinued. August 11th, 7 A. M., pulse 48, soft and full, but stronger; respirations 24; temperature 103¼. Patient not so drowsy to-day, nor so restless, and now purging freely; blister of oil of cantharides ordered to back of head and neck, the ice still to be applied over the cranium. At 6 P. M. pulse 63, still full; respiration 37; temperature 103¼. Has no appetite, but appears decidedly brighter.

August 12th, 7 A. M., pulse 72, full but weaker; respiration 29; temperature 103 1-5. Patient does not look so well this morning, and purging freely. Blistered surface ordered to be washed off and a fresh one applied of ung. cantharidi, the legs to be rebandaged and the patient to receive rice water in the shape of gruel, and to be allowed to lie down. At 6 P. M. pulse 76; respiration 31; temperature 103¼.

August 13th, 7 A. M., pulse 80 ; respiration 36 ; temperature $102\frac{3}{4}$. The purging still continues, to which is attributed the high and weakened condition of the pulse. Patient is dull and heavy, and more restless ; ordered to receive rice water injections, combining with them opium. 6 P. M., pulse 82 ; respiration 38 ; temperature 103 2-5. Has taken a little hay and rice water to-day.

August 14th, 7 A. M., pulse 92 ; respiration 42 ; temperature 104. To-day the pulse is weaker and animal ordered to be placed under stimulants, is a little purging, though much checked. He got pul. opii. ℥iv., pul. catechu ℥i., carb. ammon. ℥ii., and also stimulant baths three times a day. The application of ice and rice water injections are continued. During the day he was very restless, refusing to eat; and at 6 P. M. the pulse was 96 ; respiration 56 ; temperature 107. He continually walked around his box stall, pushing his head violently against the sides, and exhibiting stronger brain symptoms than at any time since admission. At 8:30 P. M. he lay down, and shortly after commenced struggling violently, dying in delirium about 9:15 P. M.

Post mortem made eighteen hours after death. On disarticulating at the occipite axoid articulation, a quantity of effusion escaped. On removing the brain, the entire external surface was found to be much congested, especially the left hemisphere; this appearance extending over the medulla oblongata. At the base of the right hemisphere, over the seat of the mastoid lobe, there is a sub-arachnoid infiltration. On cutting into the ventricles they are found to be filled with serosity, ℥ iii. being taken from the central ventricle of the left side. The corpora striata and the pitiutary gland are of their natural size, and appear normal. Internally, the brain substance of both the cerebrum and cerebellum appears normal, but the choroid plexes of both are the seat of extensive calcareous deposits. From each lateral ventricle were removed large tumors, oval in form, dark colored and granular to the touch, that from the left side being the largest, and weighing one ounce. It was strongly attached to the coat that forms the choroid plexus and one horizontal section was found to consist of

a mass of calcareous substance, imbedded in meshes of loose cellular tissue. Upon its external surface, at one point, a large cyst was found filled with serosity. The smaller tumor, taken from the right ventricle, weighed one drachm, and had the same appearance as the other.

The fluid contained in the ventricles was limpid and slightly yellowish, alkaline in reaction, slightly albuminous, and on cooling after being heated, a considerable coagulation was observed. The other organs were not examined.

This is a beautiful illustration of the post mortem lesion found in cases of *immobility*, and though the history of the case fails to show that the animal exhibited any of the symptoms of that disease, there is no doubt that he must have been affected with it previous to the time of purchase, and consequently was an unsound horse. Should an action be brought by the buyer, it is certain that the dealer would be condemned to suffer the loss of the animal, and to return the purchaser the price he had received for it.—*Editor*.

NOTICE.

MEETING OF THE UNITED STATES VETERINARY MEDICAL ASSOCIATION.

The next annual meeting of the United States Veterinary Medical Association, will be held at the American Veterinary College, No. 141 West Fifty-fourth street, New York City, on Tuesday, September 17, 1878. All members are respectively invited to attend.

By Order,

A. A. HOLCOMBE, D.V.S.,

Secretary.

American Veterinary Review,

OCTOBER, 1878.

ORIGINAL ARTICLES.

THERMOMETRY OF THE DOMESTICATED ANIMALS,

AND ITS USE IN VETERINARY MEDICINE.

BY AUG. ZUNDEL.

Translated from "Vortrage fur Thierarzte." Series I., Heft III., by G. A. Banham, M.R.C.V.S.

CONTINUED FROM PAGE 240.

The sex has also an influence on the temperature; thus, by mares and cows, we find it 0.5° higher than by stallions and bulls; and the same holds good for sheep. During the catamenial period in cows (bulling) the temperature has been observed higher than normal, and this being more marked in the vagina than in the rectum. Rueff observed an increase of about 0.3°. As we have already remarked, the temperature is increased in pregnant animals, especially in the vagina, which may be attributed to the fœtus being in close relations to these parts, since the fœtus is about 0.2° to 0.5° warmer than the mother.

By thoroughbreds, (or sanguinous animals), the temperature is always higher than that of low bred (or lymphatic) animals. Flemming says the difference is from 0.8° to 0.5°, the latter being the rule.

Digestion raises the temperature of the body about 0.2° to

0.8°, therefore we should avoid, as far as possible, our examination during digestion.

Assimilation of food materials only influences the temperature when disease commences from a disturbance in that process. Colin observed that when a fat horse, weighing 410 kilogrammes, (820 lbs.), fasted for a month, it lost 80 kilogrammes, (160 lbs), but the temperature remained unaltered.

In the German "Woehenschrift für Landwirthschaft," von Prof. Birnbaum, v. p. 304, Pflug says that if a horse be kept for a long time in a temperature of 0° c., with bad nourishment, its temperature falls to 36° c.

Gerlach remarks that the temperature commences to sink five minutes after a horse has taken water, and within half an hour it sank 0.8° and remained so for about four hours, after which a reaction followed, with an increase of the temperature.

Various medicinal agents have more or less influence on the temperature of the body. *Alkalies*, *salts*, (natrium sulphuricum, or kali nitricum) and *weak acids* lower the temperature; but counter-irritants and soothing medicaments, as *plumbum aceticum*, *tartarus stibiatus*, *veratrum album*, and especially *digitalis*, act most energetically in this direction, (Hirtz). A decrease of from 2.5° to 3.5° has been obtained by tolerably small doses of these agents. If larger doses are administered, the temperature sinks still more, then it fluctuates, and then sinks still lower, until death closes the scene. If *tartarus stibiatus* be continuously given, it retains the temperature about 2° to 2.5° below the normal point, (Ackermann). *Alcohol*, when given in small doses, acts as an irritant and raises the temperature; but if administered in large doses, and especially if long continued, it produces a decrease of temperature, (Bouvier). *Acidum carbolicum* more so. *Acidum salicylicum*, when administered in large quantities, produce a temperature 1.7° to 2° below the normal, (Statthaus). The narcotic agents, especially chloroform and ether, produce a temporary and quick rise, followed by a diminution of the temperature. By etherization the temperature is lowered about 2.5° to 3°, (Vogely). *Chloral hydr.* is first followed by increase, which, in about eighteen or twenty minutes, is replaced by a de-

crease of the normal temperature to about 1.5° to 2°, (Horand, Peuch). *Morphium* produces a very irregular decrease in the temperature, accompanied with continual deviations. *Camphora*, given in large doses, acts the same as chloral; but if administered in small quantities, it produces a slight increase. *Strychinine* causes an elevation of about 3° to 4° in the bodily temperature, and produces death by paralyzing the heart—before which, however, we observe a quick sinking of the temperature. The *medicamenta aromatica* cause an increase in the temperature; so do the *m. amara*, if administered for some time. *Chininum* (quinine) produces an increase of about 1°.

Cold bathing not only produces a cooling of the part to which it is applied, but also the general temperature sometimes to about 2° or 3°, and by proper hydro-therapeutical contrivances a decrease of 4° or 5° may be obtained; but the so-called reaction soon follows with increase of temperature. A *douche* causes a more general cooling than bathing. *Cold clysters* also produce a general decrease of the temperature of the body, but this is probably more local, as can be well understood from the fact that the thermometer is applied in the rectum. Gerlach says that if they are long continued, the temperature falls from 39° to to 36°. Ice packed upon the body, especially on the abdomen, produces a decrease of 0.8° to 1.7°, which is particularly noticeable in the rectum.

Violent pain causes a sinking in the temperatare (Monteganyza). Traumatism is likewise followed by decrease in the temperature, whether it is the consequence of operations or accidental.

Hemorrhage only produces decrease of the temperature when it is in large quantities and continuous. *Venesection* is uncertain and of short duration in this respect; it may cause a sinking of about 0.1°, but it soon returns to normality and even above. Frese mentions, that immediately after the withdrawal of a large quantity of blood, the temperature falls about 1°, but about an hour afterwards the temperature is higher than it was before the venesection was performed. A permanent diminution of 1.5° to 2° can only be produced by hemorrhages which cause *anemia* and almost death.

We ought to believe that *exercise* and excessive muscular action causes a considerable increase in temperature, since Helmholtz has shown that muscular contraction is accompanied with generation of heat, and Breschet and Becquerel have discovered by means of their thermoelectrical investigations, that after a muscle had contracted for five minutes its temperature rose 1°. By the thermometer the warmth is not so exactly measured, therefore this heat is not so easily discovered, and it is found requisite to trot and even galop a horse for some considerable time before a rise of 0.9° is obtained, (Siedamgrotzky und Peters). Schmalz also specified, that the highest temperature obtained by continual exercise was 1° above normality, but this soon disappeared again after the animal became quiet.

When an animal *sweats*, its temperature generally rises about 12°; but one or two hours after cooling the temperature is 0.1° to 0.5° below the original point. Sweating horses in their winter coat can cause a sinking of 1° to 1.5°.

After clipping horses and shearing sheep, their temperatures are found to rise about 0.5°, and even 0.8°; but the next day their temperature decreases about 0.5° to 1°, after which an increase again takes place. The temperature, however, remains some days below the normal standard. Siedamgrotzky remarks that the temperature increases more equally in clipped than in unclipped horses, and that they are about 0.1° higher warmer. The equalization also takes place more slowly.

Clothing diminishes the temperature of the body, and this is even more strikingly the case by that which is impenetrable by moisture; and if the body be painted with glue or tar, it produces a reduction of 3.5°, or more. If this experiment be continued till asphyxia takes place, such as the experiments of Fourcault, Bonley, Edenhingen, and Gerlach, by suppressing the perspiration, a decrease of 14°, and even of 18°, was observed before death took place, (Breschet and Bequerel). Fourcault says: If single portions of the body are painted, a decrease of 3.5° is always obtained, although those parts which are free act as compensatory.

In the *moments of death*, we observe a change in the tem-

perature of the body, which is generally a sinking. Sometimes a rise is observed, which may exceed the maximum temperature the animal showed whilst living. This is ascribed to the fact, that the amount of heat lost by dead animals is smaller than that of the living, due to the inactivity of the lungs and skin, as well as the other secretions and excretions of the body; the only source for the generation of warmth after death being the processes of chemical decomposition. Bodies in which the rigor mortis takes place slowly, lose less warmth, and therefore generate more, than those in which it occurs quickly, (Huppert, Dojére). The cadavers of animals, which were tired, or worn out, or had received bad treatment, or been exposed to excessive heat or cold before death, or those which endured a long death-struggle, and those in which rigor mortis takes place slowly, present an increased temperature in their interior, (Billroth, Fick, Huppert). Pflug observed in a case of tetanus a temperature of 36.5° immediately before death occurred; after death the temperature gradually rose in half an hour to 38.5°, after which it again suddenly decreased. It is also known that the meat of such animals quickly undergoes decomposition and fatness, and that it is impossible to preserve it by smoking or salting.

Edwards saw no difference between the summer and winter temperature of animals, but Davy that the temperature was from 0.55° to 1° and 1.66° higher in summer than in winter, especially in ruminants. Richardson says that the temperature increases from May to August, and falls again from October to April, about 0.5°.

Davy found, while on a voyage to Ceylon, that the temperature of the sailors rose as soon as they arrived at the warm latitude, the difference being from 1.7° to 2.15° between England and Ceylon. In traveling from a warm climate to a moderate one, he found a decrease of about 0.88°.

The surrounding temperature as a rule has little influence upon the animal warmth, since by importation the temperature of the animals is observed to be tolerably constant and almost independent of the medium in which they are placed. But quick and continual changes of these media can become harmful, as is shown by phys-

iological experiments, thus: if an animal be cooled to 20°, or heated to 45°, death takes place. The bodies of animals which have their liberty, accustom themselves to the surrounding cold atmosphere, and we observe, even in animals which are exposed to considerable cold, an increase in their temperature of about 0.8°. Animals which are exposed to the sun's rays, in perfect quietude, show a rise of about 1.2° to 2.3°, even when the external temperature is below that of their internal. On the other hand, if the animal can take exercise, or a breeze is blowing, it can easily bear a temperature of 50° to 60°, without their internal temperature rising above 0.5° to 0.8°.

We observe periodical variations in the temperature of animals thus: In the evening it is generally higher than in the morning. According to Gerlach, Rueff, Siedamgrotzky, and Bayer, the temperature in the evening is at least 0.1°, and often 1.2°, higher than in the morning. Chossat had already observed this deviation, and recognized it as normal. It may be observed in most diseases, and when the evening temperature is lower than that of the morning, it may always be considered as a critical sign. Brusasco quotes, that the maximum temperature of solipeds and cattle is between 5 and 7 A. M. and 9 and 10 P. M., the minimum being between 3 and 5 P. M. and 8 and 10 A. M. In the dog the maximum falls between 1 and 2, and 5 and 8 P. M., the minimum between 3 and 5, and 7 and 8 A. M. These deviations, however, are very small, only amounting to about .1°.

Disease causes the bodily temperature to depart from its physiological boundaries, the variations always standing in relation to the violence of the disease. The temperature seldom rises more than 2° to 3° above the normal standard in our domestic animals. As soon as the temperature has risen 5°, we may consider it as a bad sign; since this high temperature, so to say, burns up the body, *i. e.*, consumes it. A decrease in the temperature is just as dangerous as the above, for a reduction of 8° or 10° may be looked upon as a sign of death.

During *inflammation* the temperature rises, and the increase is in exact relation to the degree of the inflammatory fever. The inflamed part is warmer than the surroundings, but this is very

little and not at all in proportion with that of the general body. The inflamed part often shows a lower temperature than the rectum; the general increase in the temperature of the body is less influenced by the local inflamed tissue than by the fever-reaction, and the convulsions which take place in the organism against disease. So soon as the disease has attained its crisis, the temperature ceases to increase.

In the initial stage of acute catarrh of the respiratory organs, as in *strangles* or *bronchitis*, the temperature is often very high (40° to 41°); and, on acccount of other unfavorable symptoms, we often fear violent complications, such as *pneumonia*; and the more so, because the respirations are generally increased in number, sometimes very strikingly so. But the temperature, as a rule, falls to the normal point within four and twenty hours. (*Pflug.*)

By *pneumonia*, the increase in the bodily temperature is exceedingly marked; it is often 3° above normality at the close of the second day, which in the horse, is always somewhat above or below 42°, at which temperature it generally remains from the second to eighth day, being modified only by the usual morning and evening fluctuations; after which period, in favorable cases, it sinks tolerably, quickly and constantly almost to the normal temperature. During the whole stage of resolution the temperature remains about half a degree above that of health. The highest temperature which has been observed in *pneumonia* is, according to Bayer, 42.6°, in which case the animal died; in another case, a temperature of 42.3° was observed for three days, the animal recovering. Sometimes the temperature rises 2° without any striking increase in the number of respirations; and only one or two days after, is infiltration in the lungs detected by percussion. The same increase in the temperature is observed at the commencement of disease, and can be recognized much earlier than by the ordinary symptoms; again the amelioration of disease may often be pointed out by the fall of the mercury, although the symptoms of disturbance be still present. If the temperature remains at a high point for any length of time, it is always indicative of apprehension; yet we are not in a position to give any precise limit which is absolutely dangerous to the life of the ani-

mal. Death does not always occur when the temperature of the body is high, but sometimes after a sudden fall.

A differential diagnosis between pleuritis and pneumonia by the thermometer does not appear to be possible, for Bayer observed much the same phenomena in the one as the other. In chronic pleuritic exudations, the temperature remains at about 39°c. in the horse.

In *acute rheumatism of joints*, C. Harms says the temperature is about 2° above the normal condition.

When diseases of an inflammatory nature take on the healing process, the temperature slowly decreases about 1° in twelve or twenty-four hours; if, on the other hand, the temperature suddenly falls, as from collapse, the patient is in great danger, and in all probability will die.

There is an increased temperature in all *fevers*, being a characteristic phenomena of fever, which also provides us with the best means of ascertaining its intensity. In human medicine, fever plays a very important part and is very exactly observed; owing to which the thermometer has become a valuable means of diagnosis. For instance, in cases where the symptoms are not developed, or perhaps an uncomfortable feeling is the only symptom present, the pulse and other phenomena being little changed, the thermometer often proves very valuable in forming a diagnosis. This stage of the disease, however, is seldom noticed in our domestic animals.

Cl. Bernard, after whom Leyden, Traube and Liebermeister proved that the increased warmth was the principal symptom of fever as the old name fire or *felvis* (from fevere–to boil) or pyrexia (fire) long ago indicated, as did Galen when he spoke of the *calor prœtor naturam.* In fevers, where extraordinary heat is suddenly generated, the temperature rises very fast, as we may sometimes see an increase of 4° within an hour; the decrease however often follows just as quickly. In the fever-shiver, and even before, an increase may be detected long before any alteration can be found in the pulse. During the state of fever the temperature always remains high, therefore the loss of heat is greater; and if the disease decreases in intensity, or the animal

breaks out into a sweat, we notice the thermometer falls and the temperature returns to the normal condition. If the temperature of an animal continues for any length of time at 41° to 42° it should always be looked upon as unfavorable, especially when it is not influenced by the normal fluctuations of morning or evening. A high temperature can be endured longer, when it is interrupted by the morning decrease; a continual high temperature produces an extraordinary loss of condition (flesh, etc.) the so-called fever-consumption (rapid-emaciation).

(TO BE CONTINUED.)

MELANÆMIA.

Read before the United States Veterinary Medical Association, by A. Liautard, M.D., V.S.

The specimens which I beg to present to you to-day, were obtained from a grey horse, which is not unknown to some of you. In the May number of the REVIEW, page 67, Dr. C. H. Hall, then house surgeon to the hospital department of the American Veterinary College, reported the case of an operation which was performed on the same horse, for the removal of a melanoma, removed on said animal from the inferior cervical region, a little to the right of the median line, just under the lower portion of the levator humeri; an operation which was so far successful, that some twenty days later the animal presented nothing but a slight cicatrix, and was able to resume his work.

This horse was kept working as a cart-horse until the third of July, when Dr. Robertson's attention was called to him. He found him dull in appearance, with a painful walk, and grunting quite loud when made to move or to turn round; the dorsal region was somewhat swollen. Attributing this condition to probably an attack of rheumatism from exposure, the doctor directed him to be sent to the College for treatment.

At its entrance to the hospital, the following condition was noticed by the house surgeon in charge, Dr. Alvord H. Rose: The animal was dull in appearance; when made to move, it would give a peculiar grunt; the animal standing with his fore extremities abducted; the appetite is somewhat diminished; temperature 100° F.; pulse soft, about 40; respiration short and quick, with dilated nostrils, more so in inspiration—about 15 in number; his head was carried down, ears dropping, extremities slightly cool; the spinal region near the loins is swollen, more particularly on the left side.

The diagnosis I made differed considerably from that of rheumatism, as, taking into consideration his past history, I suspected the development of melanotic growth in the pectoral cavity, possibly pressing upon the laryngeal nerve and giving rise to the peculiar roaring exhibited while moving and turning.

The prognosis was unfavorable, as it was beyond possibility of removing such growth, supposing that it could have been reached for dissection.

The animal received but little treatment, beyond the administration of a cathartic given to him shortly after his admission. He was placed on close observation, and presented but little alteration in his general symptoms. His general functions remained about the same, and but little or no change could be detected until the 15th, when his temperature rose to 102°, his pulse to 50, and his respiration became a little more labored. On the 16th he did not lie down, and on the night of the 18th died.

The post-mortem was made the next morning, and proved to be one of the most interesting I ever made, the lesions being so extensive and characteristic of general melanomatous disease.

On removing the skin, the muscular apparatus is filled with melanotic deposits of small size spread here and there, the muscular tissue being somewhat paler than is usual. On opening the abdominal cavity, the peritoneal surface of the abdominal walls is covered with several melanotic tumors, varying in size from that of a pea to that of an apple; all are pedunculated and surrounded, but not covered, by the fatty layer which lines these walls. The diaphragm on its abdominal surface presents also

numerous melanotic growths, some of which are of the size of a ladies' apple. The large mesentery presents the most handsome appearance; it is a mass of melanotic balls of different size, counted by hundreds, hanging here and there in the whole extent of that peritoneal surface, and presenting, by their black prominent color, a very peculiar aspect, contrasting considerably with the color of the serous layer and its adjacent fatty deposits. The spleen is somewhat large, but apparently healthy, as well as the liver. The left kidney is almost entirely enveloped by an enormous melanotic mass, weighing 37 ounces, through which large blood vessels are found, which are coming from the posterior aorta. This presents little grape-like masses, which run through the inter costal spaces and extend in the muscles of the back. The other kidney, as well as the other organs of the abdomen, are healthy. The thorax is also the seat of extensive disease. There we find three large melanotic tumors, one at the base of the heart near the concavity of the aorta, which weighs 18 ounces; another is found in the anterior mediastine, extending forward between the first ribs, which weighs 14 ounces—probably this was connected with the one which was removed eighteen months ago. Another is imbedded in the outer surface and superior border of the left lung; it weighs 61 ounces. The pulmonary tissue surrounding is the seat of local chronic hepatization, rather limited. The nervous system was not examined.

This case, gentlemen, is undoubtedly one of general metastatic diathesis, or of melanhemia, as Zundel calls it—one in which the corpuscles of pigment are intermixed with the normal elements that are held in suspension in the blood, and deposited in the tissues by the continual traveling of the general circulation.

In horses* this disease is particularly common to observe, and, peculiar coincidence, almost exclusively amongst white horses whose skin has no pigment. In that animal the melanosis is almost always formed by a pigmentary mass deposited in block in a cellular envelope, which furnishes intermediate lamellæ, dividing the tumor in lobes and serving as supports to the nutritive blood vessels, which are always abundant.

*Zundel.

In both cases it has the aspect of a blank, homogeneous substance, sometimes grayish, ordinarily firm in consistency. The coloring matter which constitute them is soluble slowly in water and alcohol, and colors these fluids when kept in them.

Melanotic tumors have a natural tendency to increase in size by additions to the primitive nucleus; and once at a certain dimension, they remain stationary. In horses they may assume enormous size, such as 30, 40, and even 50 pounds, but most ordinarily they remain small and no bigger than a hazel nut, or an apple, or even smaller, such as a pea, in which case they are found around the glands. The tumors may remain isolated or collected in large numbers, or found in all the organism, as in melanotic diathesis.

Melanotic tumors do not always present themselves under the solid form which were found in this animal, especially when they assume the largest size, as the one found in the kidney and left lung. They are susceptible of softening, and become transformed either in part or in lots, in a kind of pulp or mud, which afterward ulcerate, throw out a dark, reddish liquid and leave ulcerated surfaces, sometimes called melanotic cancer, which then assumes an ugly appearance, very rebel to cicatrization, but rarely increasing in size. Virchow, placing them amongst the sarcoma, classifies the melanotic tumors under three separate groups: the simple melanoma, the melano sarcoma, and the melano carcinoma, and thus, admitting the possibility that there may exist *true mixed forms of sarcoma* and of *carcinoma*, or of tumors which may contain sarcomatous and carcinomatous elements, we have an explanation of the possibility of the softening of these growths, and of the malignity which accompanies, very often, their development—a point of great importance, and which must not be overlooked in the prognosis of these tumors. Such, especially, prove to be the case in this horse, for which a fatal termination was predicted when the first tumor was removed.

The pigmentary infiltration* is admitted as the cause of the pathologico-histological alteration, that is an infiltration of coloring substance, of pigment in the tissues, which pigment

*D'Arboral Dictionary, by Zundel.

is the result of a chemical transformation of the hematine of the blood corpuscles, which by modern researches have proved to be of the same nature as the coloring matter of the blood. However, this pigment of the melanosis does not differ from that which is, physiologically speaking, produced in the epithelium of the choroid of the eye, in the network of Malpighi of the skin, &c. According to Reindfleish, there is first a diffused imbibition of the tissues by the coloring matter, then a period of granular or crystalline precipitation of the pigmentary matter. This granular pigment is formed, as indicated by its name, of very small granulations, yellow, brown, or black, collected in small masses and mingling in larger and more homogeneous masses. When these granulations fill up the protophesma of a cell, the colorless nucleus is pushed aside, or surrounded by the pigment, and it seems that the pigmentary cell presents a round lacuna, or a hole. In the round cells, the nucleus soon becomes invisible, and then it remains a pigmented corpuscle, in which the external form of the cell is lost. Sometimes the walls of the cell disappear, and it is then that is formed the melanotic mass free, specially found in horses.

Though the condition of development of melanoma are yet almost unknown, Bruckmueller says that they always form themselves in the cellular tissue, especially the sub-cutaneous or subserous tissue. This was proved also in this post-mortem, where the principal growths were found under the peritoneum, between its layers and under the serous lining the thorax cavity, the pleura. But they are also frequently met in parenchymatous organs, in lymphatic glands, heart, liver, lungs, kidneys, and spleen.

It is this formation* of melanosis in the cellular tissues, which explains how these tumors are observed in all the parts of the body, as well internally in viscera as externally on the skin and in the subcutaneous cellular tissue. External melanosis are often found in horses, round the anus, at the base of the tail, and round the vulva. First of small size, these productions increase and become as big as a pigeon's egg. In growing they assume irreg-

*Zundel.

ular forms, and soon gathering together, take as they increase the shape of abnormal vegetations, without suppuration but painful to the touch. These tumors are often hairless, as the result of the pressure on the hair follicles by the accumulation of the pigment; still the sebaceous follicles remain and the skin is soft and shying. Melanotic growths are also found at the mammae and in the sheath, where they often interfere with micturations or with general circulation; thus producing swelling of these parts which have been mistaken as fore-runners of symptoms of glanders and farcy. At times they are found in parts of the body where the hairs are abundant, as the base of the ears, the axilla, and are then easily detected by the external deformity they produce. They are common in the inguinal region, and we have found it connected with squirrous cord. They are seen in the parotid region, in the internal angle of the eye at the caruncula lacrymalis.

Amongst the most frequent internal melanosis we find those of the peritoneal cavity, of the cellular tissue of the pelvic, round the rectum and in the sub-lumbar region, near the large blood vessels and the sacral plexus. Tumors at the peritoneum are generally small and in the mesentery, specially the great, assume the beautiful aspect presented in this specimen.

Melanosis of the intestines proper are rare and then generally small. Rodet* says he has found them on the small intestine and the external walls of the colon. Gurlt has also seen them on the intestine mucous membrane of the cow. Trousseau and Leblanc have found them in the kidney; still they are said to be rare. In the liver, they have been seen amongst horses and dogs, in the first as big as the fist, sometimes superficial, sometimes in the parenchyma of the organ. When they exist in the liver they are seen also in the spleen, as they are reported by Levrat and Bruckmuller, who reports a case where the spleen weighed no less than forty-five pounds. In the pancreas they are also found when the other parenchymatous organs of the abdomen, viz: the liver and the spleen, contain them. In the thoracic cavity melanoma have been principally observed in the lymphatic glands at

*Zundel.

the entrance of the chest and on the bronchial ganglions. The lymphatic glands generally become easily the seat of pigmentary infiltration, specially if situated near a melanotic tumor. The lungs contain them also, but they are more rare and principally metastatic. Mandel has seen a horse in which three quarters of a lung were filled with a large and heavy bunch of melanotic growths. When the lungs are thus affected, the heart presents them also and the pericardium is often covered with little perdunculated masses of small size.

The nervous system is not exempt. The base of the brain, its envelops and even the nerves themselves may contain them. Bruckmuller cites a case where they produced paralysis. In the eye, the sclerotic, the choroid and the retina have also presented melanotic tumors.

At last the bones, the muscles, the parotic glands, the thyroid bodies may also be found the seat of a pigmentary infiltration.

Melanosis is generally slow and mild in its development; and though it seldom kills an animal, it is not without danger. Animals thus affected lose much of their value. They may still live long, though it is generally admitted that their life of usefulness is short. It is generally only by the excessive size they may reach or by their number, that they become injurious; or by becoming soft and ulcerated.

If, however, in general* the presence of melanosis is compatible with healthy condition, they may become dangerous by giving rise to serious phenomena. They may interfere with the execution of a function. Near the anus, they may prevent defecation; at the penis, interfere with micturation. Olivier mentions a case where a tumor was pressing against the æsophagus, and from which food, liquid and solid, was stopped in its way to the stomach. Cases are recorded, where, by pressing against blood vessels and nerves, they gave rise to rebel ædema of the extremities and to paralysis. Pauleau has seen it pressing upon the pneumo-gastric, and, as consequence, the animal was a roarer. They may interfere with the motion of a joint, or produce the complete dislocation of the globe of the eye. Developed, as they are in

*Darboval Dictionary by Zundel.

case of melanhemia, these growths are most injurious to the economy; either by the alteration of the structure of the organs, which thus are deprived of their functional powers; or by the great quantity of material which they assimilate; or by the possibility of hemorrhage, which may accompany the rupture of vascular organs, where they may develop themselves, as in the spleen and the liver.

Though white animals are mostly the ones affected, bays and chestnut horses are not free from this disease. Dogs of all colors have shown them, and Bruckmuller says that white dogs never present them.

Melanotic diathesis is an hereditary disease, as it was demonstrated by the observations of Brugnone, Prinz, Gohier and others. And it is by heredity that it was introduced in some country where a white stallion, having been used for breeding purposes, had all his produces, male and female, affected in the same way. It is remarkable, however, that animals thus affected have great power of reproduction, and Girard, jr. attributes this condition to the irritation that these tumors may produce upon the organ contained within the pelvic cavity.

The curability of the disease may be considered under two points of view. It is incurable if the accumulation of pigmentary substance is only considered, as it is not in our power to prevent it; but if merely the treatment of one local tumor is considered, it may be possible to remove it, if even of large size, and heal up entirely. But there is no need to be hasty in interfering with the presence of one of these tumors, unless it interferes with work or some special function; as it has been observed that the removal of one is often the cause of a new life in the development or growth of other melanotic deposits, which otherwise might have remained perfectly harmless.

EDITORIAL.

THE MEETING OF THE UNITED STATES VETERINARY MEDICAL ASSOCIATION.

As we announced in our last number, the Sixteenth Annual Meeting of the United States Veterinary Medical Association

took place on the 17th of September, in the American Veterinary College, and proved a perfect success. Since the foundation of that body, in 1861, there never was a better or a larger attendance, even at the meeting held in Philadelphia in 1876. The meeting of the Comitia Minora first transacted some minor business, and was followed by the general meeting of the Association. After the usual routine, reports of committees, election of officers, admission of members, &c., the next business in order was the reading of papers and discussions; and, contrary to what was the general custom of the Association, quite a number of interesting matters were presented. The day closed by a splendid dinner, where all the members gathered together and kept enjoying themselves until ——, (very early in the morning). Toasts to the Association, to the Veterinary, to the Medical Profession, to the American Veterinary College, and to the Press, were answered by the different members present, and everything passed off to the satisfaction of every one.

The United States Veterinary Medical Association, composed, as it is, mostly of regularly educated Veterinarians, of certified members which in old days did not have the opportunity of attending regularly chartered schools, and of a few self-made practitioners, has the right to feel proud of its position and of the work it performs. It is, no doubt, called to be one of the most solid pillars of the profession, if the good feeling and *bonne entente* which prevailed at this last meeting can be kept up. We reproduce, for the benefit of those who were prevented from attending the meeting, some of the papers which were read, and also a full account of the business transacted.

NEW MEMBER OF THE PROFESSION.

It is with great pleasure that we announce the success which has crowned the studies of Mr. F. S. Billings, at the Imperial Veterinary School of Berlin.

Known to our readers by the numerous good articles which they owe to his pen, he is besides personally acquainted with some amongst the veterinarians of this country; and we hope he

will soon be able to assume in America the rank which his high studies will undoubtedly give him right to.

There is something interesting in the graduation of Mr. B. which ought to flatter our American confreres, and that is that *he is the first American graduated at a German school*; and of course, on the standard assumed by our correspondent, it is an important position. German entirely as he has proved himself in his writings, we cannot expect from him other than Germanized principles. But with all that, he has graduated with the highest honors; and for one, who but three years ago was ignorant of the German language, this is highly flattering.

Though having received his degree of *Veterinarius* from Berlin, Mr. B. does not consider his studies as complete. He writes to us that he goes soon to study with Wirchow, and that after passing some time with this great master, he intends to go to France and take advantage of what the veterinary schools of that country can show him. Knowing these places as we do, we are much pleased to see him going there, as some of his impressions in relation to those schools will, we believe, be advantageously modified.

At the end of his French studies, we understand that he is to return home, to that home of good veterinarians, Massachusetts, and at Harvard College study for the degree of M.D. This step is an excellent one and in our days of all titles, true and false, regular and irregular, attained by hard work or assumed by imposition, the diploma of M.D. will probably be one of his best means to arrive at the object he has in view, if we can judge by his articles on Veterinary Education published in *Turf, Field and Farm.* For it seems that nothing else can be undertaken by our worthy colleague, viz: the realization of what he considers the ideal of Veterinary schooling.

It is true that, with his education, medical as well as veterinary, he may lay claim to almost any position connected with the two medicines. The formation of a General Sanitary Bureau, at Washington was talked of, and he would no doubt be an excellent man for the position. A department for medical and veterinary investigations would give him a great opportunity

to apply his extensive and thoroughly acquired knowledge; but, it appears to us, that at the wheel of advancement of veterinary science proper, is his place.

Speaking of Claude Bourgelot, the father of veterinary medicine of the world, when alluding to his talents, his earnestness, his enthusiasm, Mr. B. says, in relation to America: "*We need twelve men like him.*" Let our friend return to his native land, to his state, and let him be one of the twelve; he may find some worthy companions in the realization of his work.

While, however, we congratulate our profession in America at the success obtained by Mr. B., we cannot but regret that it may be some years yet before he has joined our ranks. The veterinary profession is passing now a serious crisis, and is in a time when she requires all the efforts of her members and her friends, to protect her against the rapacity of the constantly assailing hydra, which, in the shape of unscrupulous and unworthy individuals, are every moment attempting to drag her in the filth of empiricism and imposture.

Student of Gerlach, enemy of quackery, well educated, and with his facile and quick pen, he must remember that the American Veterinary profession needs many like him in her small army of followers. We hope, therefore, that Mr. B., in his studies, will not forget us, and continue to provide our readers with many articles, which we have no doubt will, like past ones, prove most interesting to them.

NOTICE.

On account of want of space we are obliged to postpone to our next number important communications which were received some time ago, and also the other papers read before the Association. Mr. Myers' article and a letter from Prof. McEachran, on Veterinary Titles, will appear in the November issue.

THE UNITED STATES VETERINARY MEDICAL ASSOCIATION.

The sixteenth annual meeting of this Association was called at 12 o'clock, M., in the lecture-room of the American Veterinary College, 141 West Fifty-fourth St., New York City, on Tuesday, September 17th, 1878, with the President, C. P. Lyman, in the chair. Members present were: L. T. Bell, J. F. Budd, J. C. Corlies, O. H. Flagg, J. D. Hopkins, A. Liautard, C. P. Lyman, G. Penniman, C. Burden, J. B. Cosgrove, W. J. Coates, A. A. Holcombe, C. H. Hall, A. Lockhardt, H. H. Lawrence, L. V. Plageman, J. L. Robertson, E. F. Thayer, J. H. Stickney, and T. S. Very.

The minutes of the previous meeting, held in Boston, on March 19th, were read and accepted without revision, as also was the report of the Comitia Minora.

The Committee on Diseases, by its Chairman, T. S. Very, of Boston, Mass., reported as follows:—

Mr. President:—Having been appointed on the Committee to report on Diseases, with instructions to report on the diseases of horses' feet, I beg leave to present the following:

There has not occurred, in my practice, neither have I seen, any unusual case of lameness worthy of particular record or comment, during the past year. Most of the cases that I have seen, were of the kind commonly met with, some of which have yielded surprisingly to simple treatment, others of which have resisted remedial means that were tried.

One might suppose that there exists at all times a proportionate amount of lameness to the number of animals in use; but I have an impression that the percentage of lameness to-day is much less than it was some years ago. Certainly, this is the case, so far as as my observation goes, in the city and vicinity where I live.

In this, it is possible that I am mistaken, but I am quite sure that the percentage is not nearly so great among the horses used on the street cars, as it was five years ago.

This may be attributed to the fact, that in buying these horses, more pains are taken in selecting them than formerly, and to a better system of shoeing and managing them generally.

I have an impression, that horses are shod better, generally speaking, than they were ten years ago, although to-day the work is done imperfectly enough. But there is something connected with the shoeing of car horses, in which a great change has been made, deserving of more than passing notice.

Five years ago, or more, all of our car horses were shod with shoes having toe and heel corks; now, most of them wear the thin-heeled "Goodenough" shoe. When they were shod with the corked shoe, certainly one in ten was lame. Now that they are shod with thin shoes, so that the frog comes to the ground, there are comparatively very few lame ones. These statements are made from a careful and constant observation of the two methods of shoeing, in their application to this class of horses; and the managers of roads, finding that light shoes and frog pressure work well, adopt and continue the system.

Now, I do not appear as an advocate of the so-called "Goodenough" system of shoeing. The shoe itself is a coarse article, which might be improved, and the system is older than Mr. Goodenough, or almost any living man. But it is my opinion, that horses doing this particular kind of work, do it more acceptably, and at a much less risk to their feet and limbs, when shod this way, than when shod with heavier toed and heeled shoes.

All members of the profession are, or should be, acquainted with all the arguments which have been advanced in favor of the frog-pressure system; and while we recognize the utter absurdity of most of them, still the results cannot be ignored or disputed when the system is properly tried.

Mr. Goodenough once told me, in conversation, that when the horse stepped on the frog, a sort of valve was opened, which allowed a certain oil to run down the leg into the foot, and that this oil kept the posterior parts of the foot in a healthy condition. Also, that frog-pressure expanded the hoof at every step, which was necessary in a physiological point of view. Also,

that contraction of the hoof was the cause of lameness in almost all cases, &c., &c.

There is more or less absurdity in all of such statements, but without stating any reasons myself why this class of horses work better with light shoes and frog-pressure, I have considered it important to notice the fact, and hope to hear an expression of opinion from the gentlemen present, as the subject is one of great importance, and an interesting one at all times.

I will remark, that in practice, I have found it to work badly to attempt any such radical changes as are made sometimes by exponents of the so-called "Goodenough" system. I have known animals to be lame for a long time, because their heels have been cut down immoderately and the frog brought to the ground injudiciously, when a gradual accomplishment of the same object would have been attended with good results; and, therefore, I would suggest that such radical and sudden changes are inadvisable.

I desire to call attention to the fact, that lameness in the hind feet of road horses is much more common than is generally supposed, which fact has been brought to my notice recently in a number of instances.

Usually, we have not paid much attention to the feet, in diagnosing lameness of the hind extremities, particularly if there existed on the hock or other parts of the affected limb an enlargement, supposed to be the seat of lameness. Latterly I have been more careful in making examinations for lameness in the hind limbs, and with more satisfaction to myself, for I have not infrequently found the lameness to proceed from the foot, which at first appeared to come from enlargement indicating disease of other parts.

We all know that it is rarely that a perfect hock is met with, and that a large number of horses having curb, or spavin, are never lame, and for this reason I believe it to be unsafe to state that an animal is lame from curb or spavin simply because such defects are apparent on examination. I say this, because I have made such mistakes, and can remember more than one instance where I have located lameness in the hock or fetlock, when fur-

ther investigation and treatment, which relieved it, have proved it to have been in the foot.

It is a custom, in shoeing road and coach horses, to set the hind shoes back from the toe, to prevent "forging," even where there is no necessity; and it is rarely that the shoes are fitted full to the feet, because horse-shoers generally believe that by setting the shoe inside of the wall the tendency to interfering will be overcome. It is easy to see that such a method of shoeing will often produce lameness from the shoe coming in contact unevenly with portions of the sole of the foot, and perhaps from the nails having entered the foot too near the sensitive parts. If examinations of the feet are made when the shoes are off, very many of them will be found tender, if pressure is applied with the pincers, even in cases where there is no apparent lameness. Some horses that are not lame will prove troublesome to handle, on account of twitching their feet away from the smith when the clenches are hammered down, because the operation is painful to them. Such indications of tenderness are not noticed, except an animal is lame, but in such feet a slight cause will often develop lameness of a persistent nature, which ordinary remedies do not relieve at once.

Horses rest their hind feet by flexing the leg and bringing the toe to the ground, shifting from one to the other, and this to me is an evidence of soreness, as much as when I see them "point" with the fore feet.

I have simply called attention to the frequency of lameness in the hind feet, without attempting any details concerning it, because I have met with it quite often, and because I believe examinations for lameness ought always to include the foot. An animal may be lame from spavin, or other cause, and still the lameness may be increased from some injury to the foot acting at the same time to produce additional pain. If this was known, it might be relieved in season to do a great amount of good.

Hoping that the gentlemen present will discuss the matter of frog-pressure shoeing, and relate their experience, if they have had any, in connection with it, I respectfully submit this somewhat imperfect and hasty report.

B. McInnes, of Charleston, S. C., reported that nothing of any importance to the profession had occurred in his neighborhood since his last report, except a case of hydrophobia in the horse, the history of which he could not obtain, because of the ignorance of the owner. On motion of A. Liautard, the report was laid on the table for further consideration, under the head of "reading of papers and discussions."

A. Liautard, Chairman of the Committee on Education and Intelligence, read the following report:

Mr. President and Gentlemen:—It is not my intention to present these remarks as a report of the Committee on Education, but as I probably understand the duties of such a committee in a wider sense than is generally the case, I hope you will accord me a little of your attention while reading these few pages.

At the last meeting of our Association a subject relating to veterinary education was brought before you, and, after much discussion, a resolution was passed empowering your committee to take any step they might see fit. The object of the whole affair was the call of a convention of all the veterinarians in the country engaged in teaching veterinary science, with the view of arranging a general curriculum for all the colleges, and thus, to a great extent, do away with those beautiful claims, such as "being the only chartered institution in the state," or as "being the school which has the greatest number of graduates in successful practice," and therefore place all colleges on the same footing.

At the time when this resolution was passed, you were made acquainted with the answers which were received in relation to the possibility of calling such a congress, and when your committee took the subject in hand, they soon became satisfied of the impossibility of reaching the desired end. Many interests were at stake, personal undertakings, private ambition were all most likely to be brought in opposition; and, taking all this in consideration, it was thought better to let the matter drop for the present at least.

Probably another subject, which might be brought to your notice by your committee, is an attempt to the regulation and recognition of veterinary practice in the State of N. Y., as made

by the bill presented last winter before the Legislature, in session at Albany. The words of the bill were made known to you, and, therefore, without passing remarks upon the bill, without stating anything about its propriety, its powers, etc., and the objections which were brought against it, we may only say that it was nicely pigeon-holed and left there. Why should I bring this before you now and what has this bill to do with veterinary education? you may ask. With your permission, I will answer that I mention it at present as I consider that veterinary education for me, as one of your committee, is not only relating to education in schools or colleges, and to those who wish to enter that profession, but to education at large—to veterinary education of our people. Why is it that so-called veterinarians, who can neither read nor write, that self-called veterinarians, who are ignorant of any of the fundamental principles of medicine, are allowed to practice? Why is it that veterinary schools are permitted to turn out *regular* graduates after a few months' study of a science which, we all know, requires several years before the beginning of it can be understood? Why is it that here quackery and ignorance, with impudence and audacity, impose themselves on the public, while the self-made or the regularly educated veterinarian has to work hard to make his way? and, finally, why is it that such a bill as the one alluded to was pigeon-holed. The answer I have no hesitancy in giving is, because our people are ignorant of what constitutes the elements of education of the veterinarian, and that for the public as yet, our profession, the business of a horse doctor, of the cow leech, of the gelders, are all the same.

The veterinary education of the people, then, is, I think, a subject which is worthy our attention and deserving some of our efforts.

It is generally admitted by all that the most powerful means of educating the people is the press, and certainly we will acknowledge that probably the educated standing of a nation might be measured by the quality and prosperity of its periodicals, be what they may, political, religious, agricultural, medical or *veterinary;* and if the press is the means of educating the people as to the requirements of veterinary surgery, if by it we can show

what veterinary science means and how essential and important its different branches and specialties are to agriculture, to political and social economy, it seems to me that we will then have succeeded in doing away with all these drawbacks, and that veterinary education will have made a powerful go-a-head step. And now how are we to ask from the press her powerful assistance, and to what special part of it are we going to apply ? I may say that any will answer, that scientific columns would certainly be a good means, but that I believe that papers whose subjects are more or less connected with our specialty ought to be preferred. Agricultural papers therefore will, in my estimation, be the ones through which we may attain our object. There is, however, I believe, some distinction to be made in the writings which ought to find their way into these papers. Veterinary medicine has wide range, the connective links of its different branches are found in various specialties, all of which are interesting to the agriculturist, to the stock raiser; here, for instance, it is chemistry, there botany, here zootechnie and hygiene, there general practice and sanitary medicine, without forgetting those important branches, shoeing and laws of warranty, and from them I conclude that they are the subjects which we must take as means of education of our people. It is not—and here, Mr. President, I hope the following will not be taken in any other light than it is intended, in other words, far from me the slightest idea of making any personal remarks, or of throwing blame on what some may consider proper and professional—but I say it is not the gratuitous advice which may be found filling up column after column of the pages of some of our best papers by which we will educate the people on veterinary science. Yes, I not only consider that road an improper one but as one injurious to the profession. Those amongst us who have found time to throw away in reading the many questions and answers which are printed, know as well as I do how useless, how worthless, many of them are.

We know that it is remunerative, we know that it pays, but we are positive that it does no good to the veterinary profession. You will be told, "If I do not take it a quack will, and while I do not sanction it entirely, I think by keeping it away from the

ignorant man I do good to the people, I do good to my profession." No, a thousand times no, you do not, and you are deeply in error in supposing that by doing a quackish act you prevent quackery.

Mr. President, I am surprised at myself when I read these lines, for I am afraid I am unable to express as I would, in a language more familiar to me, to some of my friends who I see amongst us, how erroneously they work when engaged in this gratuitous prescribing.

If agricultural papers offer us so great advantages, I consider that it is greatly on account of the large number which are to be found all through the United States, and the excellent and superior quality of many, but I cannot leave this subject without mentioning the paper of your own profession, the *American Veterinary Review*, and to say a few words of the part it has played and of the influence it might have:

You remember that just two years ago, in this very room, a motion was presented by our worthy President, by which the *American Veterinary Review* was born. You were kind enough to do me the high honor of placing me at the head of the undertaking as the editor, and though I warned you against your choice, and after I pointed out to you how, more competent than myself, many members of our Association there were who could fill the place, I entered into the performance of the duties assigned to me, bound to do my best and succeed if success was possible under the circumstances. In a few words, with what results have these two years of the *Review* been passed? A circulation three times as great as when you began, and a recognition from England, France, Belgium, Germany and Italy, which extracts from our paper—such is what has been done. No debts and supporting itself—such are the results.

But satisfactory as these are, and proud as I am to know that I have been instrumental in securing them, are they sufficient and are they the utmost which might be expected from the *Review?* No, it ought to be that very part, essential part, of the press by which we can bring our profession forward and educate the public in the knowledge of the appreciation of the veterinarian.

I may here suggest, in relation to the *Review*, that it seems to

me the time has come when I ought to lay before you the honorable position you have given me and make room for one whom you might deem better fitted to continue the good work so far done, but in so doing I would ask to be allowed a recommendation which past experience has shown me to be of the greatest importance. Give your editor *carte blanche* for his management of your interests in the paper, and above all, let him make his own choice of his assistants. I am positive the *Review* will gain by it. Let him surround himself, not by a few of the same city, by practitioners who will see almost through the same light, but on the contrary let him pick out his assistants here and there, east and west, north and south, at home and abroad, and I guarantee it will not be by triple but by ten, fifteen times that you will count the number of your subscribers, and by this increased circulation give a larger help to public education.

One word more and I finish. One word in relation to essentially veterinary education, to the American Veterinary College, in the welfare and success of which I hope all of us are interested. You all have watched the efforts of the faculty; you all have appreciated the obstacles they have found in their way; you all know of the slurs and insults which were thrown at that institution, to such an extent that even a few amongst us said they felt sorry of the equivocal position of the school. That never existed, and there can be no more doubt, no more fear expressed towards that school. This, remember, gentlemen, is not a city, a State affair, properly speaking; it is our college, if we call ourselves the United States Veterinary Medical Association; the college, though situated in New York, is the American Veterinary College, and what may ever happen in the progress of veterinary science in America, I believe it will be called to be one of the fundamental stones of what may come. It will therefore be satisfactory to you to hear that the college has never been in better condition, that her alumni are all engaged in good and lucrative practice, that her students are coming and coming again from all parts of the country, and that her professional standing abroad or at home is as high as any old institution would desire to be.

The Committee on Prizes reported that but one paper had been presented for their consideration, and owing to an informality upon the part of the author, it could not come before the Association for their prize. The chairman further reported that the prize offered by F. S. Billings, of Berlin, for the best paper on anthrax, had been awarded to J. F. Winchester, B.S., D.V.S., of Lawrence, Mass., and the Secretary was instructed to inform the recipient to that effect.

In accordance with the recommendation of the Board of Censors, the following gentlemen were elected to membership: J. F. Winchester, B.S., D.V.S., Lawrence, Mass.; Wm. G. Schmidt, D.V.S., Newark, N. J.; A. H. Rose, D.V.S., Staten Island, N. Y.; S. S. Field, D.V.S., N. Y. City; W. H. Wray, D.V.S., Dobbs Ferry, N. Y.; Wm. Murphy, V.S., Cambridge, Mass.; J. McLaughlin, V.S., Lynn, Mass.

The chair appointed as Committee on Nominations, A. Lockhart, O. H. Flagg, T. S. Very, J. D. Hopkins, and L. T. Bell. The Committee reported all the present officers for re-election. T. S. Very and E. F. Thayer were appointed tellers to collect and count the ballots, and reported as follows:

For President.—C. P. Lyman, 13 votes; A. Liautard, 2; T. S. Very, 1. *Vice President.*—W. Bryden, 14; L. T. Bell, 1; A. Lockhart, 1. *Recording Secretary.*—A. A. Holcombe, 14. *Corresponding Secretary*—W. J. Coates, 15. *Treasurer*—C. Burden, 14; J. F. Budd. 1. *Board of Censors*—J. L. Robertson, 14; A. Lockhart, 14; J. H. Stickney, 14; A. A. Holcombe, 14; E. F. Thayer, 14; A. Liautard, 14.

The Treasurer reported the finances of the Association in excellent condition.

At 2.30 P.M., a recess for half an hour was taken for refreshments. Upon being recalled, the Secretary read a communication from T. S. Very, reporting a "Singular Fracture and its Results."

J. H. Stickney presented two plates, showing the location and extent of fracture, after which the subject was discussed by Messrs. Liautard, Very, Stickney, Lockhart, and Thayer.

A. Liautard read a paper on *Melanæmia.*

Three beautiful specimens in alcohol were presented with this paper, and the author was warmly applauded on finishing the reading.

A. Liautard then called the attention of the Association to the fact that he had been editor of the *American Veterinary Review* for two years, and tendered his resignation as such, suggesting to the Association at the same time, that when appointing their next editor, they give him the privilege of selecting his own assistants and of conducting the *Review* in accordance with his own judgment.

On motion of T. S. Very, seconded by J. H. Stickney, Dr. Liautard was unanimonsly re-elected to the editorship, and given the privilege of selecting his assistants and conducting the *Review* as he may think best.

The Secretary then read a paper on "Acute Inflammation of the Air Passages and Pulmonary Emphysema, Arising from the Inhalation of Vegetable Smoke," by J. Myers, Jr., D.V.S., of Cincinnati, Ohio.

A lengthy discussion then followed, upon the different papers read before the Association, most of the members present participating in the debate. At 6 P.M. the meeting adjourned to the Ashland House, corner Fourth Avenue and Twenty-fourth St., where, at 7.30, the members of the Association, with Mr. Hatfield, Superintendent of the Society for the Prevention of Cruelty to Animals, and members of the city press, sat down to a sumptuous dinner.

A toast to "The United States Veterinary Medical Association," was replied to by President Lyman, who spoke in complimentary terms of the work which the Association was doing, and of the harmony and good feeling existing among its members.

"The Veterinary Profession" was responded to by E. F. Thayer, of Boston, Mass., who spoke earnestly of the great importance which the science bears to our national wealth.

"The Medical Profession" was answered by J. H. Stickney, of Boston, Mass., very pleasantly contrasting the "sister sciences," and claiming for our own all possible honor.

"The American Veterinary College" called out Prof. Liautard, who facetiously referred to the early efforts of the Faculty at teaching veterinary medicine, tracing the growth of the College from the time they lectured to one student up to the present, and predicting that a bright future would enable her to add many more able and faithful supporters to the profession.

After dinner pleasant speeches passed away the time until midnight commanded a final adjournment.

A. A. Holcombe, D.V.S.,
Secretary.

REPORTS OF CASES.

A SINGULAR FRACTURE AND ITS RESULTS.

By Theod. S. Very, V.S.

On the 21st of March a buckskin horse showed symptoms of tetanus. He had been kept in a large box-stall, with plenty of straw on a dirt floor, and the accident occurred without any one knowing how it happened.

The peculiar spasm and general appearances of tetanus were not so well marked as in most cases, and there was less excitability. The muscles of the cervical and abdominal regions showed the greatest degree of contraction. There was no particular rigor of the limbs, and no erection of the tail. No lockjaw; appetite fair, and no symptom of local pain. He was moved about and showed no lameness.

March 23d. Details concerning the treatment of tetanus I believe are not of much importance, so I shall not describe mine. To-day the animal showed less excitability than yesterday: has a tolerably full and regular pulse, not much accelerated, and his general appearance was more comfortable. He was able to eat and drink, but not inclined to move about.

March 24th. A messenger brought word that the horse was down and suffering intensely. I found him lying on his left side

thoroughly wet from perspiration. His respiration was at the rate of sixty per minute, pulse about a hundred. The rise and fall of abdominal muscles, in breathing, was extreme; his nostrils were widely distended; and his general appearance indicated speedy collapse. However, I deemed it advisable to make an attempt to get him on his feet, and this was accomplished without great difficulty. To my surprise, after staggering about for less than a minute he was able to stand without help. The jaws were firmly closed and the rigor of the muscles of the neck and body was intense, but in an hour afterwards these symptoms became modified, and gradually, through the day, he grew better, until at night he was able to drink quite well and eat a considerable quantity of soft feed.

March 25th. This morning he stood in his stall looking as if there was nothing amiss with him. He could eat and drink quite well and had a fair appetite. There was scarcely any noticeable spasm of any muscle; respiration normal, pulse 40, tolerably full and regular; membranes slightly injected; no perspiration and no symptom of pain. I judged he would recover.

March 26th. He got down last night, and, with some assistance, was placed on his feet again. This morning he laid down at seven o'clock, and died without a struggle at nine and a half o'clock, before my arrival at the stable.

Post mortem, assisted by Dr. Stickney, at eleven o'clock on the 27th.

All of the internal organs were in an apparently good condition. Stomach and bowels about one half filled with food; bladder empty. Under the ilium, on the off side, there was found a clot of blood as large as a foot ball. The pelvis was fractured in a most unusual and peculiar manner, as were also some of the superior spines of the sacrum; and I will attempt to describe the separated portions of the bones as they appeared after cleaning. Transversely through the foramen ovale, from side to side, there was a complete fracture. Anterior to the acetabulum, the shaft of the ilium was broken and crushed into a number of small pieces, some of which were lost in boiling. The broad anterior portion of the ilium and about four inches of its shaft remained

whole. This left the acetabulum and the portion of the pelvis each side of it, to support the weight of the body, with the assistance of whatever resisting power there was in the muscles or other soft tissues, with which it came in contact in its probably somewhat changed position. The fourth, fifth and sixth spines of the sacrum were broken off below their heads. Two questions at least will naturally arise in the minds of readers.

1st. How could the existence of such a fracture escape notice during life?

2d. Why did he die in the apparently painless manner, and without a struggle, as he did?

To the first of these I will answer that I do not know. The fracture was not observed or suspected, nor was any positive symptom of it present during life. He was in a private stable, adjacent to the residence of the owner, who, together with two grooms, saw him, as I did, every day. Apart from the stiff and awkward gait peculiar to tetanus, he walked well enough when he was moved, and he stood squarely on all his limbs when on his feet. He also got into a fair position when he urinated, and the fact of finding his bladder empty shows that he had passed his water a short time previous to death.

The cause of the fracture is unknown, and I cannot say why his manner of death was so sudden and painless as it was.

PROLAPSUS VAGINÆ BEFORE DELIVERY.

By E. F. Thayer, V.S.

On the 30th of May I was called to see a cow, the property of Mr. Solomon Flagg, of Wellesley. On my arrival I found the animal straining violently, and a portion of the vagina protruding beyond the vulva. The owner stated that the pains came on the evening previous, also "that her time was out." As she did not make any progress, he called in a neighboring farmer, who had had considerable experience among cattle, who made an examination, but was of the opinion that the calf could not be felt. As it was to him an unusual case, he advised the owner to send for me.

On examination, the os was entirely closed; on applying the hands over the uterus, the movements of the fœtus were distinct and vigorous. As the cow was suffering from nervous irritability and exhaustion, I administered an anodyne stimulant and had the rear part of the stall elevated. She soon became quiet, and remained so until the 2d day of June, when a fine, healthy calf was found behind her.

PROLAPSUS VAGINÆ—TORTION OF THE UTERUS—DEATH OF THE COW AND FŒTUS.

By E. F. Thayer, V.S.

I do not report this case as peculiar, but to show the contrast between that and another which occurred in my practice within a short time of each other.

On the 19th of June I was called to see a heifer which, as the owner expressed it, "could not calve." On examination, I found the animal in nearly the same condition as in the former case, with the exception that there was less prolapsus vaginæ. The os uteri was entirely closed. As the bowels were slightly costive, I gave a saline cathartic. On the 20th the condition was about the same, the os remaining tightly closed; the fœtus was alive, yet not as lively as on the day previous. 21st.—The fœtus is evidently dead. By persevering labor, I was able to introduce the finger into the os, but not in a straight line, but to the right. It gave it as my opinion that the uterus was twisted, and had her rolled over and over on the floor, but did not succeed in altering the position of the parts. I informed the owner that I could do nothing but perform the cæsarian operation, but would not advise that, as I did not think she would survive the operation. On the following morning she was dead. I requested the owner to keep the body until I could make the autopsy. On my arrival at ten o'clock, I found the body in pieces. The calf was well developed, and had been dead but a short time. I believe that a twist of the uterus existed, but through the obstinacy of the owner was prevented from proving or disproving it.

IRREGULAR STRANGLES.

By E. F. Thayer, V.S.

On the 10th of August, I was called to attend an abscess in the intermaxillary space of a colt, the property of the estate of the late Benj. E. Bates. The foreman in charge stated that he had opened three, but as this was in the neighborhood of the large blood vessels, he did not dare to. The colt was thin in flesh, but had a good appetite. I advised a liberal quantity of food, and stated that it was a case of irregular strangles, and that there was danger of internal abscess, which, if occurring, would cause a fatal result.

On the 26th, I was called in haste, as the colt was breathing very short. On examination, I found dullness in percussion on both sides; evidently effusion had taken place. Prognosis—death; which occurred on the next day. Autopsy—On removing the walls of the thorax, there was seen sixty-eight quarts of serum, with a large amount of effused lymph. The lungs adhered to the walls and to the diaphragm. In separating the lungs from the diaphragm, an abscess opened which contained eight or ten ounces of clear, white pus. In connection with the pleura, in the anterior part of the thorax, were four other abscesses, containing several ounces each of pus, of the same charter as the one first mentioned.

HOME EXCHANGES.

American Agriculturist, New York; National Live Stock Journal, Illinois; New York Rural, New York; Turf, Field and Farm, New York; Hospital Gazette, New York; Medical Record, New York; Maine Farmer, Maine; Ohio Farmer, Ohio; Scientific Farmer, Massachusetts; Scientific American, New York; Prairie Farmer, Pennsylvania.

FOREIGN EXCHANGES.

Journal de l'Agriculture, Clinica Veterinarier, Archives Veterinaris, Mouvement Medical, Revue fur Thierheilkunde und Thierzucht, Recueil de Medicine Veterinaire.

CORRESPONDENCE.

Dick Royal Veterinary College Circular, J. Myers, Sr.

AMERICAN VETERINARY REVIEW,

NOVEMBER, 1878.

ORIGINAL ARTICLES.

PLEURO-PNEUMONIA ERYSIPELATODES.

AS AN OBJECT FOR THE VETERINARY AND SANITARY POLICE.

BY DR. HERMAN PUTZ OF HALLE, GERMANY.

Translated from the German " Vortrage fur Thierarzte," by F. S. B.

The time is come, says Prof. Putz, when the veterinarian must change the character of a non-participating medical empiriker for that of an earnest, combative interest in medical science, and in the progress of that part to which he himself belongs, in order that hygienic and police regulations conformable to the times may be made and executed by men possessing the absolutely necessary technical comprehension of their duties; and a true aggressive, and scientific veterinary medicine find its development and appreciation among the people.

The restriction and suppression of "Lungenseuche" is one of the more important questions, occupying the attention of those interested in the agricultural welfare of a nation at the present time; it is also a question which belongs exclusively to the veterinarian and the agriculturist to solve, and only by their united endeavors can the problem be satisfactorily studied. The essential properties of this disease from our point of view are:

1. The long period of incubation, extending from three weeks to as many months or longer, the same being afebril and enabling the disease to be present among cattle for a long time without exciting any suspicion of the same, and much less its recognition. This secret invasion of the disease is all the more possible, as by a mild course and insignificant local affection, the recovery of the complicated organism is by no means seldom, without the disease having at all assumed the feverish or apparent stadium by which it would be recognized.

2. The chronic course of the disease being the rule which, in some cases with inclusion of the reconvalesence, may extend over six months, a year, and in extreme cases longer. Further, the circumstance that such an animal is, during the entire period, a centrum from which contagium is constantly emanating:—these are the *peculiarities* which render the *stamping out* of this disease a task of no inconsiderable difficulty. We find trustworthy communications in veterinary literature, which report the infection of healthy animals by such, by which a year or even fifteen months had elapsed since their apparent disease, or even after apparently complete recovery.

3. If we take also the transportability of the elements of infection into consideration, which favors the direct conveyance of the disease from individual to individual, as also the possibility of infection by indirect ways, the question becomes still more complicated.

It is self-evident that the stamping out of a disease having these peculiar characteristics is bound with many difficulties. It is also as self-evident that we shall be able to attain this much to-be-desired end when regulations corresponding to these peculiarities come into active and intelligent execution; as we can safely assert that the disease at the present day owes its origin entirely to the distribution of its infectious elements from an already complicated organism and does not develop abiogenetically. As the newly drafted Prussian laws pass silently over the fact that the continued introduction of fresh animals into stables infested with this disease, thereby continally supplying new food for the same, so the disease may continue ad infinitum. If we cannot entirely

restrict such introduction of fresh and undiseased cattle into infested stables, yet the laws must be so made and executed that the same may be restricted into the narrowest possible limits. This would probably be most effectually attained by the State refusing to allow any reimbursements for such introduced animals whether perishing from the natural course of the disease, or if killed by the veterinary police in the execution of the law, whether found diseased or not. It is not difficult to decide what means or regulations are scientifically indicated for the suppression of this disease. The immediate destruction of all infected droves and thorough cleaning and disinfection of all their surroundings, is the only safe and radical means which offers itself to our consideration; by this means, and this alone, can we have any hope of destroying the unknown infectious elements by which the disease is sustained and extended. The very excellent conditions existing in Switzerland demonstrate most effectually how valuable for the other continental States is the obligatory and exact execution of regulations of this kind. One hundred years' experience in the canton of Bern, very rich in cattle, has so emphatically proven the trustworthiness of the above assertion, that in the new laws for the Swiss confederation the same is made obligatory for all. Art. 24 of the "Laws and Regulations against Animal Pests" (1872) contains the following words: "*No cattle which have been diseased by pleuro-pneumonia can on any account again become an article of transport.*"

"When this disease presents itself in any district, not only the diseased but other cattle in the same stable or drove or grazing upon the same land, must be unconditionally killed. Only by special permission of, and under the most stringent control of the veterinary police authorities may treatment be allowed. Animals which have been diseased and withstood the same, and are apparently healed, may be at once slaughtered, but cannot become an article of transport."

The most stringent regulations must exist against adjoining lands where the treatment of the disease is allowed, and where such animals are again permitted to become an article of transport on apparent recovery.

According to No. 43 of the Prussian "Instructions for the Execution of the Laws in reference to Animal Pests," it is permitted that animals may again become objects of transport from a given stable after the lapse of six months from the last case of disease. Every person who has had experience in this disease knows that such animals frequently give occasion to the further extension of the disease: this fact is known not only to veterinarians of experience, but to many breeders and cattle handlers as well. If we will attain control over this disease in a reasonable period, all animals which are not destined for immediate slaughter within the limits of the infested or previously infested grounds, must be restricted from all intercourse with others, or transport, if not during life at least for a period of not less than *one year and a-half* from the time the last case of disease had disappeared from the point in question; the slaughtering of such animals should only be allowed under definite restrictions and official inspection.

Experience in Switzerland has proven this to be by far the cheapest manner to treat this disease. The remuneration which has been paid to cattle owners in the canton of Bern, for the fifteen years from 1859 to 1874, for the obligatory slaughtering of cattle for the purpose of stamping out this disease, according to official reports, amounts to but 54,600 francs. If all the adjoining lands had such laws, and as well executed, as the pest-surrounded Switzerland, the governmental remuneration for cattle peremptorily slaughtered for this disease in this State, as well as those surrounding it, would soon sink to null. To obtain this much-to-be-desired point, must be the end of our united endeavors.

It is self-evident, that the exact execution of such laws would at first be bound with many and variable difficulties, as well as great expense, in different lands or provinces; however, we do not think a large capital could be better invested. Even in Switzerland, the exact execution of the laws in question meets opposition and difficulty; but these are always overcome, not only without disadvantage to the individual owner, but to the essential welfare of the State and its different departments. It is for those interested in the discussion of the best means for

stamping out this disease, ever to remember that the time will never come when the same can be done without the sacrifice not only of much human energy, but of money also. They should also remember that great parsimony in one direction, is generally followed by equally great extravagance in another. It is self-evident, that the period fixed for the introduction of such radical measures, should be carefully adapted to the agricultural and economical interests of the districts in question and the individual owners. This would seem possible, by restricting the earliest possible period at which a once diseased animal could be slaughtered, to one and one-half years from the time it had apparently become free from the disease.

So long as we are unable to bring to bear means which are capable of thoroughly stamping out this disease, must we do our utmost in other ways to shorten its course and render the same milder. Inoculation has been for a long time looked upon as such a means, without authorities, however, coming to any united opinion over the exact value of the same. It has been, indeed, asserted that this pest can be stamped out and its course shortened by the exact restriction of all intercourse between healthy and diseased animals, at a much less cost than by inoculation. Is such a method capable of execution? How can we recognize the disease in its latent stadium, during which the complicated organismus is capable of causing infection, although in a less intense degree than in the fever stadium. *All individuals by which this disease is present, even in the afebril stadium, are capable of infecting their non-diseased companions, for a long period before they themselves are looked upon as diseased;* therefore, the early establishment of immunity against natural infection is much more safe and effective than the isolation of the diseased from the healthy animals. Such an isolation is, in many cases, impossible on account of insufficiency of room. Aside from this, we have, thankfully—in Germany—so far progressed in the treatment of this disease, that all manifestly diseased animals are at once killed, and I hope that in the new laws with reference to the animal pests, which are in process of being drafted for the entire German empire, a way will be prepared for the immediate

killing of all the animals of small herds in which the disease has freshly broken out in a district which had previously been free from the same. In large industrial establishments, where cattle are kept, it is possible that the exact execution of such a regulation would be met with economical considerations of such import to the agricultural condition of the district, as to render the same unjustifiable. THEREFORE, IT IS SO MUCH THE MORE OUR DUTY TO TEST IN THE MOST EXACT MANNER THE VALUE OF INOCULATION.

Wellenbergh, director of the Veterinary School at Utrecht in 1852, says: "Shall it really result that the receptivity for the infectious stuff of pleuro-pneumonia can be rendered null by means of inoculation, for which some authors contend, but which can only be conceded when the animals are again exposed to infection after the inoculation and its results have entirely disappeared, then we must look upon this discovery as one of the most important in the interest of veterinary science."

Since then inoculation with reference to pleuro-pneumonia has been practised in many lands, and found many enthusiastic defenders among veterinarians and agriculturists. In the 3d report of the Holland Commission—1855—consisting of the Instruction Collegium of the Utrecht School—Wellenbergh, Jennes, Heckmeyer, Van Laer, Witt, and Hengeneld, it is said that the inoculation of Willems, correspondingly and circumspectly employed, has no equal in veterinary medicine. Opposition to inoculation is not wanting, however, but mostly from persons wanting in actual experience in the inoculation question. In Saxony, where the disease has constantly prevailed for a succession of years, all cattle owners who have become acquainted with inoculation through actual experience, are almost unanimously of the opinion that the same is capable of rendering good service in reference to shortening the course of, or the stamping out of, pleuro-pneumonia, if timely resorted to and executed in a conformable manner. In my opinion, it would be a great error to pass over with silence or neglect the experience of *enlightened* owners or breeders. Herr Rimpau, a very intelligent and experienced agriculturist, read an extensive paper with regard to this question, from which I make the following quotations (found in full in Zeitschrift

fur Wissenschaftlich, Landwirthschaft—Sachsen, 1877): "It is a peculiar phenomenon, that the question of the value of pleuro-pneumonial inoculation cannot yet be considered as scientifically settled, although the same has been the subject of active and repeated discussions at the meetings of veterinarians and agriculturists. In the greater part of the sugar, starch, and spirit factories of Saxony, where great numbers of cattle are kept, and where the disease in question appears nearly every year, the owners are so completely convinced of the prophylactic power of inoculation, that they either subject all newly-introduced animals to the so-called 'protective inoculation,' or at least subject all their animals to inoculation (peremptory inoculation) on the breaking out of the disease. At the meeting of the Central Union Saxon Agriculturists, at Neuhaldensleben, in the summer of 1877, this question was discussed, and not a single agriculturist was found to support the doubts of several veterinarians present against the protective power of timely and properly executed inoculation."

On the contrary, it is the opinion of the majority of the veterinary authorities—and among the same men of scientific repute—that the material at present before us is insufficient to prove either the absolute or relative protective power of inoculation, and, further, that the opinion of the majority of Saxon agriculturists, as well as some veterinarians, that the inoculation exerts an absolute prophylactic influence, is a mistaken one, and that the disease takes the same course with or without inoculation.

It is to be remarked that it is especially Saxon veterinarians, who have in reality had the most practical acquaintance with this question—among Germans—who have had the best opportunity to gather statistics, that we find inoculation strongly in favor, while the majority of those opposing the same have lacked such opportunities to study the disease and this assumed prophylacticum. Rimpau finds his views strengthened by the observation and experiments of Kreisthierarzt Ziegenbein, and remarks upon the same: "When a veterinarian can bring together such a number of well authenticated cases speaking for the value of inoculation, and compares with the same the average loss which

he has himself observed where inoculation has not been resorted to, I think he has every cause to be highly in favor of the same."

At a meeting of the Central Veterinary Union of Saxony, a very trustworthy veterinary authority says: "That after careful observation, he was ready to affirm *that inoculation was not only strongly justified, in regard to the combatting of this disease, but it is also the duty of every man to do his best to see it executed.*"

Rimpau says further: "We must also emphasize, that the friends of inoculation among the veterinarians do not by any means assert that the same is an unconditional means of protection for the inoculated animal against infection from 'Pleuro-pneumonia erysipelatodis.' So far as my knowledge extends, all concede that protection first begins when the action of the inoculation has begun; *i.e.*, the phenomena necessary to the same have become apparent at inoculation's point, and when the animal has not in the intervening time become the subject of the disease, let the latter be apparent or not." According to this view then, those cases of disease which come to pass by inoculated animals within from four to six weeks from time of inoculation, cannot be looked upon as proof against the protective power of inoculation; they are much more to be looked upon as indicatory of the untimely recognition of the pest which had already gained considerable extension in the herd at the time of the inoculation, or that the contagion has affected many animals concomitantly. Further, most "Impfärtze," (inoculators), concede that cases come to pass where inoculated animals become subjected to the natural disease several months after the same has taken place, and that in all cases the inoculation does not provide absolute protection, although the phenomena necessary to the action of the same have been apparent; on the other hand, they assert that such cases are exceedingly scarce, and that inoculation may always be considered as offering an important degree of protection against the natural disease. Rimpau also gives expression to very justifiable doubts with regard to the trustworthiness of the statistics and statement to be found in this regard in the "Mittheilungen aus der thierärzt lichen Praxis im preussischen Staate," the same being inexact: In order that such should be trustworthy it is necessary that

the following conditions should be, in each individual case, given with the greatest exactness: the exact number of cattle present in each stable or drove; the exact number inoculated; the exact number of animals by which inoculation's reaction has been observed; the exact time which has elapsed between the diagnostication of the pest and the inoculation; remarks whether the veterinarian had anticipatory suspicions of the presence of the disease among the cattle in question; how, when and where the lymph for the inoculation was procured, and how the same was treated or preserved until used, the instruments used, and the locality at which each animal was inoculated; the number of animals and distinguishing characteristics of the same, by which inoculation's reaction was apparent; the loss directly resulting from inoculation; the number diseased, and number of cases ending lethally by the natural disease after the inoculation, with the time which has elapsed in each case since the latter had taken place." (I recommend the careful consideration of the above conditions to my American colleagues.—TRANSLATOR.)

Prof. Pütz remarked that Herr Rimpau, who, by the way is one of the largest and best educated and observing cattle breeders in Saxony, is incorrect when he thinks the majority of Saxon veterinarians hold opposite views to himself with regard to the value of inoculation. The veterinary literature of the last ten years is rich in communications, the majority of which speak for the protective power of inoculation. The meeting of the Central Veterinary Union, for Saxony, Thuring and Anhalt, held in Halle, March 20th, '78, discussed this question very earnestly, and emphatically coincided with the views of Rimpau and other agriculturists. With a majority of 50 to 6 it was asserted that:

"*Inoculation*, according to our present experience, offers protection against the natural disease."

Negatived, "that the inoculation exerted any influence upon animals previously diseased with the natural disease." Also, "that the artificial disease exerted any influence in the extension of the pest."

Affirmed further, "that the inoculated disease caused much less sacrifice of property than the natural one."

ACUTE INFLAMMATION OF THE AIR PASSAGES AND PULMONARY EMPHYSEMA,

ARISING FROM THE INHALATION OF VEGETABLE SMOKE.

BY J. MYERS, JR., D.V.S.

In consideration of the numerical and exhausting treatises and discussions of pathological processes, regarding the respiratory organs. found in text books and periodicals, it would almost seem unwarranted to infringe upon the sphere of your organ, as well as the time of its readers. But by reason of some marked differential characteristic phenomena, which existed throughout the course of the following described cases, as compared with the ordinary class of pulmonary afflictions, I feel as though I might communicate some interesting circumstances by forwarding this report.

Nov. 28th, 1877, at 2 P. M., I was requested to go to E. Walnut Hills, a suburban district, about three miles from the city, to render the necessary assistance toward restoring health to three horses, which presented symptoms of a severe pulmonary affliction, contracted by the inhalation of smoke that had been generated by the burning of a haystack stored in the basement of the stable. This department also served the purpose of a cow stable, harboring three head of cattle, which had been suffocated by the inhalation of said smoke.

On my arrival, I found the three equine patients in a good hygienic condition, quartered in a well adapted architectural structure, which was very strongly impregnated with the disagreeable odor of burnt hay. The horses presented a very anxious upheaded appearance, audible respiration, their mouths filled with a foamy saliva and a thin yellowish discharge from the nostrils, with a frequent rough dry cough, very characteristic of the inauguration scene of the epizootic influenza. Although the symp-

tomatic appearances in all three patients were quite analagous during their course, they differed somewhat in intensity and peculiarity, which compels me to quote each case in a brief manner separately.

Tom, horse, was about 9 years old, rather plethoric. On the first day pulse 70; respiration numbering 40 per minute, of a noisy character; temperature $102\frac{4}{5}°$; expirium damp and warm; conjunctiva congested; schneiderian membrane of a scarlet hue; discharge from the nostrils yellowish, clotty and foamy; the mouth filled with a viscid saliva; peripheric temperature, particularly that of the extremities, lowered. I will here state, that percussion, throughout the whole course of the disease, in all three patients, appeared less remarkable than in the usual pulmonary difficulties, though the general alteration tended toward an exaggerated vesicular resonance. Auscultation revealed the presence of sibilant and sonorous rales. The movement of the nostrils and abdominal muscles were of the greatest intensity.

29th.—Pulse, 66; respiration, 34; temperature, $101\frac{1}{5}°$; physical signs not quite so distinct; the passage of air through the nostrils not near as audible as on the 28th; schneiderian membrane less injected; epithelium around the margin of the nostrils began to peel off; expirium cooler; appetite delicate; desire for water limited. Considerable debility was already displayed.

30th.—Pulse, 66; respiration, 28; temperature, $101\frac{4}{5}°$; the audible respiration subsided to some extent; the discharge turned white and grew less; schneiderian membrane not quite so florid; desire for food and water very moderate.

Dec. 1st.—Pulse, 60; respiration, 24, emphysematic and slightly audible; temperature, $102\frac{4}{5}°$; the dilation of the nostrils and the elevation and the dropping of the flanks became more noticeable as the laryngeal symptoms subsided; nasal discharge assumed more of a catarrhal aspect; cough rough, with evidence of pain. On auscultation, the respiratory murmur over the upper half of the lungs was of a sibilant and sonorous type, the lower portion disclosing a broncho-vesicular breathing. Appetite improved; the gait became more firm, and he lay down at night.

These pathognomonic symptoms appeared more or less marked until about the 8th or 9th of December, when the functions of the general system became more normal, so that by the 15th I was able to discharge him.

Dick, horse, 15 years old. Nov. 28th.—Pulse, 80; respiration, 40; temperature $104\frac{1}{5}°$; air passed through the nose quite forcibly; schneiderian membrane of a scarlet hue; a white, foamy discharge escaped from nose and mouth; auscultation revealed the presence of sibilant and sonorous rales; cough very painful and of a high pitch; the active flank movement and distension of the alæ of the nose were extraordinary; conjunctiva injected.

Nov. 29th.—Pulse, 60; respiration, 40, emphysematic; temperature 102°; refused all nourishment; no discharge from either mouth or nose; fecal matter dry and coated with mucus.

Dec. 1st.—The laborious breathing, dilated nostrils and elevated head, would make it appear as though a severe case of pulmonary emphysema was before the observer, but the highly inflamed schneiderian membrane, accelerated pulse, numbering 70, loss of appetite, hoarse cough, broncho-vesicular breathing about the superior portion of the lungs and mucous rales at the lower portions, would not substantiate such a diagnosis.

From this patient I removed three pints of blood from the jugular vein, which was strongly impregnated with the odor of smoke, and charged with considerable carbonaceous material.

Dec. 3d.—Pulse, 70; respiration, 20, of a like character as on the 1st; temperature, 101°. A walk of one hundred yards was all he could accomplish, for want of breathing capacity. A considerable quantity of purulent mucus could be found about the manger and the fore part of the stall.

Dec. 5th.—Pulse, 68; respiration, 17; temperature, 101°. During inspiration, the left lung conveyed a moist bronchial rale, and on expiration, a sonorous rale would be discovered. Cough at times was very harsh, and at other occasions suppressed; extremities nearly always cold; appetite insignificant; feces costive.

Dec. 8th.—Pulse, 60; respiration, 10; temperature, 102°;

subcrepitant and sonorous rales are heard over various portions of both lungs; a desire for food was manifested. The animal lay down and was able to endure a fifteen minutes' exercise.

Dec. 13th.—Pulse, 60; respiration, 10; temperature, $101\frac{3}{5}^{\circ}$. Function of the lungs approached a more normal condition, notwithstanding an attack of dyspnœa that he experienced the day before, which was induced by an excess of exercise, but proved to be only temporary. This dispnœa was followed by violent coughing spells, causing a copious expulsion of mucus that had been lodged within the bronchi, which afforded great relief. Repetitions of such similar symptoms presented themselves at irregular intervals, until finally the normal condition of the lungs was restored, which took place about the fourth week of his illness.

Bill, horse, 6 years old. Nov. 28.—Pulse, 90, faint; respiration, 66, and quite audible; temperature, $103\frac{1}{5}^{\circ}$; nose and lips covered with frothy sputum; schneiderian membrane of a scarlet hue; expirium moist and warm; no cough; an abundance of sibilant and sonorous rales present on both sides.

Nov. 29th.—Pulse, 76; respiration, 48; temperature $102\frac{3}{5}^{\circ}$; cough rough, dry and distressing; physical signs about the same as on the previous day.

Nov. 30th.—Pulse, 72; respiration, 36; temperature, $103\frac{2}{5}^{\circ}$; no discharge from mouth or nose; cough infrequent and suppressed; extremities cold; entire loss of appetite.

Dec. 1.—Pulse, 66; respiration, 18; temperature, $102\frac{3}{5}^{\circ}$.

Dec. 3d.—Pulse, 96; respiration, 36, and as audible as at the outset; temperature, 103; nasal discharge quite foamy; schneiderian membrane of a cyanotic appearance; an extreme activity of the flanks and nose was called upon to maintain existence. This aggravation of symptoms was brought about by half an hour's exercise that the patient was subjected to shortly before my arrival, (without my approval). Auscultation furnished an abundance of sibilant and sonorous rales; cough suppressed; urine of a dark brown color; appetite insignificant; desire for water very moderate.

Dec. 5th.—Pulse, 72; respiration, 40; left lung conveyed to

the ear a strong tubular breathing; on the right side, principally over the upper portion, it was of a sonorous character; expirium warm and dry.

Dec. 6th. Pulse 68, small; respiration 44; temperature $102\frac{2}{5}$. In order to test his pulmonary capacity, I had him led about one hundred yards, but owing to the alarming dyspnœa it produced I was obliged to have him sent back to the stable; the dyspnœa however very soon subsided without any medical interference.

Dec. 8th. Pulse 68; respiration 40; temperature $102\frac{1}{5}$. Sonorous and sibilant rales were still heard at different portions of the lungs; schneiderian membrane not quite so florid; nasal discharge albuminoid and beaded; cough stronger, but painful.

Dec. 10th. Pulse 73; respiration 22; temperture 103. Notwithstanding the patient partook of a fifteen minutes' exercise shortly before the examination, I found the respiratory acts decidedly diminished. The interchange of air within the lungs gave rise to a variety of murmurs that were not easily distinguished from one another.

From December 13th until the 29th (one month after the occurence of the fire) continuous improvement of the pathological phenomena could be observed on each successive visit: his appetite increased, lay down regularly, when exercised looked quite cheerful: pulse reduced to 54; temperature $101\frac{2}{5}$; but the labored audible respirations, numbering twenty-four per minute with a dry, forcible cough and the augmented action of the nostrils and abdominal muscles was still in progress, indicating an emphysematous oppression of the lungs, which did not appear very favorable for a radical cure.

The owner, who considered the condition of the horses good enough to trust the balance to physiatrice, remarked, that he would report to me if the horses should not continue to do well.

As unusual as the cases appeared to me, their nature, in my estimation, did not require any other treatment than what would be indicated in an ordinary case of bronchial and pulmonary trouble.

Treatment: For the first three days I administered the fol-

lowing dose, repeated every four hours. Extr. belladonna ʒj. Tinct. lobelia ʒij. Spirits nitr. dulc. ʒvj. Syrup simpl. ℥j. Mf drench. After the third day I adopted a stimulating course of treatment, which I followed up for about ten days: this consisted of two drachm doses of carborate of ammonia three times daily, after which time I administered one oz. doses of Fowler's solution twice per day. The inhalation of warm vapors was kept up for fourteen days morning and evening. Application of mustard to the walls of the chest was also resorted to several times on Bill.

In view of the extreme labored respiration that Dick displayed on the fifth day, and considering his powerful physical condition, I administered a cathartic, which gave him considerable relief.

At the outset it was my zeal to have the patients removed from the contaminated atmosphere that they were quartered in, to some pure, well-ventilated stable, but it was impossible for the horses to make any kind of a journey without aggravating the disease; therefore I deferred the project from day to day until the necessity grew less, and finally dropped that part of the treatment.

A perusal of my veterinary literature for analogous cases proved them to be very limited. I found but one instance, recorded in the Reportorium by Fry of Winterthur, where animals had been endangered and destroyed by the inhalation of heated air and wood smoke. In my patients the injurious agent was smoke exclusively, claimed by some to have been generated by the combustion of blue meadow grass, (poa pratensis latifolia) which was stored in the basement. This smoke must certainly have been cooled before reaching the equine department, through a door in the centre of the stable which had accidentally been left ajar.

This foreign material set up an irritation and inflammation throughout the tubular structures of the lungs to their ultimate ramifications, by the deposition of carbonaceous material. Not only were the lungs deranged by this morbid element, but it also created a hyperæmia of the nasal, laryngeal and tracheal mucous

membrane, thereby encroaching upon their respective caliber, giving rise to the above mentioned audible breathing and peculiar profuse excretion.

On March 19th, 1878, Dick was suddenly attacked with colic pains, dependent upon an impaction of the large colon, from which he died. Through this event I had an occasion to make a post mortem examination of his lungs, which presented a healthy aspect, but did not recede on opening the thoracic cavity.

Whilst visiting Dick I also had an opportunity to examine Tom and Bill. Tom recovered entirely from his ailment, but Bill was afflicted with pulmonary emphysema (heaves) in its severest form, rendering him utterly useless.

I am at a loss to account for the unsatisfactory termination that Bill fell victim to, in other way than that the violent exercise he at one time was subjected to by the groom in his ardent effort to have the team in harness before his month expired, thinking, that if he should be successful, he might retain his situation, which he had already been notified to vacate. However, it is possible that this permanent emphysena might have set in without that irrational manner of treatment, for at all times he exhibited more serious symptoms than either of the other horses. His pathological lesions may have been of a more serious nature. There may have existed a dilatation of the bronchioles, or a paralysis of the same, as well as of the air cells, produced either by the poisonous effects of carbonic acid within the lungs, or by the violent effort to inspire air during the suffocating moments. He, being of a nervous temperament, may even have ruptured a cluster of air cells during a frantic state he may have been in, while under the immediate influence of the smoke.

A very striking observation I experienced was the valuable prognostic services the thermometer furnished me. Considering the accelerated pulse and the alarming respiration, I might have been directed to express a very erroneous opinion regarding the final state of the patients without the aid of the thermometer, for which purpose as in a great many other cases it proved indispensable.

THERMOMETRY OF THE DOMESTICATED ANIMALS,

AND ITS USE IN VETERINARY MEDICINE.

BY AUG. ZUNDEL.

Translated from "Vortrage fur Thierarzte." Series I., Heft III., by G. A. Banham, M.R.C.V.S.

CONTINUED FROM PAGE 287.

The thermometer has been little used in diseases of the typhus type in animals, although it has been of great value in typhus of man. According to Schmidt, Adam, Brusaseo, Bayer, and Stratthaus, the measure of the temperature in this disease gives very valuable explanations and conclusions for its diagnosis, prognosis, and treatment. The temperature provides us with a tolerably exact idea of the general condition of the patient; for example, if the temperature remains moderate, although some unfavorable symptom, such as dullness, &c., may be present, we may always entertain hopes of recovery. In diseases of the typhus type, we always have the pulse increased, as well as the temperature, but these are not always parallel to each other in intensity; for it is often observed that the temperature decreases whilst the pulse considerably increases. On the other hand, cases present themselves in which the number of pulsations are small, although a high temperature is present.

In diseases resembling typhus, a slow rise in temperature for the first, third, or fourth days often takes place; sometimes a rise of 1° to 2° is seen at the commencement, and the morning and evening deviations are always more marked than under normal circumstances. In the first case, a regular increase of the temperature takes place, and has received the name "staircase-like" (treppenartig); in others it rises at once to the maximum point. Brusaseo says, that the quicker the temperature reaches its maximum, the more dangerous or violent is the disease; whereas, when the curve rises slowly the prognosis is more favorable. The temperature may reach 41° to 42°, and Adam saw it even reach 43.75°. Stratthaus has seen horses recover after having a tem-

perature of 41.7°, whilst after 41.8° or 42°,* they always terminated fatally.

The temperature remains for a variable period at this height, but always shows a deviation of 0.5° to 0.8° from evening to morning. Sometimes this variation is still greater, and Brusaseo observed a sinking of 1.4°, and even 1.8°, from evening to morning. From energetic treatment, such as *cold-bath*, *douche*, and internal remedies, a quick decrease of the temperature is observed; also, the daily deviations are less noticeable. After some days, (which varies in different cases), the temperature slowly decreases by the so-called staircase-like (treppenartig) curve, until the normal temperature is attained. In the evening, however, an increase is always seen, which by the morning is improved again. In some cases the temperature decreases rapidly, and, if it does not show an increase in the evening, we observe a great improvement next morning. In such cases the curve suddenly changes, and we may even have a normal temperature in the morning, although it was a high temperature the previous evening.

The temperature gradually cools, the differences disappear, and an apyretic condition is present. A diminution of about 1° daily, after a disease has attained its crisis, is a favorable sign, which symptom generally precedes others of improvement. A decrease of temperature without improvement of other signs, is generally indicative of evil, and often of internal hemorrhage. A violent diarrhœa can also cause a decrease of the internal temperature, especially if it suddenly appears. If the diminution is very striking, for instance 35°, we may look for septicæmia, necrosis of lungs or intestines, and a quick end. It is also a bad sign if the temperature suddenly rises. This is particularly so in diseases of the typhus type, in which case a sudden rise either points out that a local part is worse or that a relapse has taken place. At the commencement of the death struggle, we often observe an increase even to 43°, in others a decrease—each may take place slowly or quickly.

When the temperature remains at a high temperature for

* A short duration of a temperature of 42° and 42.5° is not uncommon, and recovery often follows.

some time, it is, as above mentioned, a bad sign, even if other symptoms show improvement. Liebermeister has ascertained that these abnormal and continuous increases of the temperature present themselves in most infectious diseases, where decomposition of the blood takes place. A distinct increase is noticed in anthrax, the thermometer standing at 41°, and sometimes at 41.7°. Brusaseo has seen it at 42.6°. At the moment of death, a sudden decrease to 38°, and even 36°, takes place. Fossati mentions that in an outbreak of anthrax, it was possible to recognize diseased animals by the thermometer. One or two days before the peculiar symptoms developed themselves, he always found an increase of 1° or 2°. Rivolta experimented with rabbits, and found an increase of 0.5° four hours after inoculation, and in one animal a rise of 0.75° in the same time, which rose to 2.25° after nine hours, death following in about seventeen hours.

In pig typhus (so-called) (Rothlauf der Schweine) the temperature rises from 40° to 41°; and Gerlach observed a temperature of 43.1° and 42.5° an hour before death. Harms even reports a temperature of 43.4.

In *septicæmia* a destruction of the tissues is characterized by an excessive increase of the temperature, which in horses may reach 41.9°. A horse affected with pyæmia had a temperature of 41° for nine days with very little remission (Bayer). In a dog the temperature was very fluctuating, the highest point being 41.8°, which at death was 38.9°, and after the last beat of the heart it rose quite suddenly to 39.2°. The pain, or traumatismus, of animals which have been operated upon, causes at the most an increase of 1°. When the thermometer shows an increase of 2° or 3°, septicæmia or pyæmia may be feared, and we must immediately seek for the origin of the infection.

In *paturient apoplexy* (kalbefieber), which I consider a septic infection, a temperature of about 41° is observed; and if a sudden or quick decrease takes place, we may safely prognose a fatal termination, the cooling being due to collapse or want of force. Adam, however, observed in one case the subnormal temperature of 35.7°, which gradually improved as the cow recovered her consciousness, when it showed a temperature of 39°.

In exanthematous fevers, which are generally of an inflammatory character, with the formation of papules, vesicles, or pustules on the skin, and less frequently on the mucous membranes, they take an acute course, and are frequently contagious (for instance, sheep-pox). At the commencement we always find an increased temperature, which, however, again decreases when the eruption appears on the skin. This is particularly the case in foot and mouth disease, in which Rueff, Stockflett, and especially Brusaseo found in the first stage a temperature of 41° to 42°; but after three or four days it considerably decreased, if inflammation of the feet did not follow. According to Brusaseo, an increased temperature is present before the disease is visible, so that we are enabled to detect the healthy from the diseased by this means.

In *variola ovina*, Peters always found the temperature high, as a rule 42.6°, but with great fluctuations, the temperature only periodically attaining this degree. The temperature is highest at the commencement of the disease, decrease taking place as soon as the eruption shows itself, whilst a return of increased warmth is noticed in the suppurative stage. Death either occurs when the temperature is considerably below the normal standard, or when it quickly rises above 43.5°

In *rinderpest* the temperature reaches 41° and 42°, and according to Gerlach, even to 43.2°; the intensity of the disease being in relation to the temperature. It has been ascertained by Anderson, Gamgee, Gerlach, Pflug, Bouley, Chauveau and Wehenkel that an increased temperature can be observed a day or a day and a-half before the other symptoms. By experiments carried out in Dorpat, it was proved that an increase in the temperature took place 36 or 48 hours after inoculation. The rise in the period of incubation is from 1° to 2°; this may sometimes be valuable in daily practice. The temperature rises very quickly in rinderpest, the maximum being often attained the first day, at which point it remains for two or three days, after which it falls to little above normality: a slow rise from day to day is an unfavorable sign; and a sudden decrease foretokens the approach of death; adynæmia, with collapse. In the course of this disease we often observe

what Gerlach called a "relapse," that is, the temperature suddenly rises to the same degree it presented on the first day. We have few diseases which gives such remarkable curves as this.

In *pleuro-pneumonia contagiosa*, Dele first noticed a change in the temperature in the stage of invasion, and declares it normal in the incubation period (latent aufangsperiod); but this is not endorsed by Smeale, for he says, that although the animals appear healthy, they show an increased temperature if they are under the influence of the contagium (*i. e.* if they are affected), but this is an assertion which we can scarcely receive as truth. According to Dele the temperature rises from 38.2° to 41.3°, and the more acute the disease is, the quicker this takes place, the temperature remaining high until the disease abates. Dele lays great stress on the value of the thermometer for the diagnosis of pleuro-pneumonia contagiosa. He says there is no other thoracic disease which gives a temperature of more than 40°, and if we have it above this we may be sure we have a case of pleuro-pneumonia contagiosa to deal with.

Glanders, in the chronic form, generally presents no increase of temperature; we sometimes even find a decrease; we generally observe great irregularities, in cases which are of a remitting type. In the acute form, however, Brusaseo found the temperature gradually rose to 41.5° and 41.7°, being interrupted by slight deviations.

A decrease of temperature is seen in cachectical diseases, especially dropsies, and not in those of a febrile character. In a case of peritonitis, accompanied with ascites and chronic indigestion of a cow, the temperature presented only 37.25. Ruhr and Siedamgrotzky observed the temperature fall to 35°, sometime before death occurred. In passive enteritis of horses, a reduction of 1° to 1.5° is seen.

Siedamgrotzky noticed the temperature gradually decrease from 38° to 34° and 35°, in a dog suffering from icterus, and once it even reached 32°, resulting in death.

From *excessively draining* the system, as from vomition or purging, hemorrhages, and after debility caused by hunger or thirst, in short by all cases where the strength is much exhausted

a diminution of the temperature is always more or less observed.

Chronic diseases are always accompanied by decrease of temperature, and especially *tuberculosis*. If an increased temperature presents itself in the last named disease, it proves that a complication, with inflammation, is present, or that the disease is at a crisis; the increase is usually small but accompanied with aggravation towards evening; it is often observed to be of a remitting type.

In *paralyzed parts*, Schmitz, Barensprung and Nothnagel observed a slight decrease in the temperature. Tolet, on the other hand, found an increased temperature on the paralyzed side in *hemiplegia*, which as a rule did not exceed a degree. The temperature is partially decreased in dead (gangrenous), œdematous, and indurated tissues, also frequently in those parts of the body which are at rest, as well as in all parts where the circulation is small, or the cooling is increased; a reduction of 5° or 10° can take place. We cannot ascertain this reduction by the thermometer at the rectum, but with the "Thermographen."

The thermometer has a particular diagnostical value in *diseases of the brain and spinal cord*, especially to separate encephalitis from chronic congestion and amentia (Dummkoller). It is maintained by Zanger and Johne, that in encephalitis the temperature rises to 40° and 41.3°, whilst in amentia (Dummkoller), it remains normal, or sometimes below the normal point. It should not be forgotten that the life of the veterinary surgeon is sometimes in danger, by ascertaining the temperature of animals suffering from acute encephalitis.

It is erroneously asserted that *tetanus* is accompanied with increase of the temperature. Bayer noticed that the temperature remained almost normal, so long as the disease takes a moderate course; but if the disease takes an acute and fatal course, the temperature quickly rises, and even surpasses that observed in other diseases. In one case the temperature was 39.2° some days before death, but about an hour and a-half before death it stood at 41.2°, and at the moment of death 44°, from which it rose within 50 minutes to 45.4°, where it remained for about five minutes, and then began to fall. The same was observed by Trasbot. In

one case, which recovered, the temperature never exceeded 39.3°. Siedamgrotzky noticed in a tetanic dog, which recovered, the temperature to be about normal, 38.4°, at the commencement of the disease. On the fourth day it fell below the normal, viz., to 37.3°, and gradually returned again to the original temperature from the fifth to the eighth day.

In the nervous form of *febris catarrhalis epizootica canum* (distemper), the temperature is generally low, and in *chorea*, it is generally subnormal; the same is observed in *eclampsia*. During violent cramps, however, the temperature is increased to 39° and even 40°. By the phenomenon of depression a decrease in the temperature to 35° was noticed by Siedamgrotzky, in a fatal case of distemper caninus.

I have used the thermometer to diagnose the different kinds of colic in horses. For instance, to distinguish an inflammation of the intestines (enteritis) or inflammatory colic, in which venesection is necessary, from the non-inflammatory, which are generally due to congestion, and states of the blood caused by emboli in the arteria mesenterica anterior, and also from paralysis of the intestines, in which case irritating agents are useful. In the first case we find the temperature rises to 40°, whilst in the last it sinks to 37° and even to 36°, and if a sudden increase takes place in the last instance, it is a sign that mortification has set in. Bayer says that no correct idea of the temperature can be obtained in colic, from the fact that the clysters act as a local means of cooling the rectum and vagina. Adam has observed a temperature of 39.6° in vagina during enteritis.

Strangulated hernia and invagination of the intestines are always accompanied by a low temperature, and the more extensive the incarceration is, the more marked is the decrease of the bodily temperature.

It was above remarked, at the commencement of this paper, that fever and temperature go hand in hand together during disease, and that they form the initial phenomena. They are due to the local changes caused by alterations in the action of the nerves, which is followed by an increased consumption of the tissues. It has been proved by Liebermeister that the co^2 increased with

the temperature; Coze and Fely also proved an exact connection between the quantity of urine excreted and the temperature. Animals suffering from fever excrete one and a-half times more of both decomposed products than those in health.

If we compare the relations of the temperature to the pulse and respiration, we find, as a rule, that in acute disease it stands in direct relation to the frequency of the pulse, but we do not find that a given temperature corresponds in any way to a given number of pulsations. A great contrast often exists between the temperature and the pulse. We may often observe an improvement in the pulse after the temperature has fallen, whilst increased warmth is often preceded by increased frequency of the pulse, but the pulse cannot be accepted as a scale for the degree of fever present. As a rule, we should always take that moment which presents the worst sign; thus, if the pulse is quick and the temperature moderate, the pulse is most important; and if the pulse is slow and the temperature high, then the temperature; and this relation is the more important the greater the contrast shown.

There is no proportional relation between the temperature and respiration.

In conclusion, I will give the researches of Bulkey, which are based upon numerous observations in different diseases, and which are commonly received as references.

The daily observation of the pulse and respiration together with the temperature is often of the greatest importance for the (cliniker) practitioner. If the general symptoms harmonize with the temperature but not with the pulse, we may follow the first two in spite of the pulse not being in unison. When the pulse and the symptoms of the disease present an unfavorable course and the temperature points in the opposite direction, it is only valuable when the temperature shows a marked and persistent improvement. If the pulse and other symptoms show improvement, and increase of the temperature simultaneously takes place, it should always excite hesitation. In order to obtain the greatest advantage from the remaining means of research, they should be considered in connection with the temperature. By an exact and

systematic comparison of the symptoms of disease, (*i. e.* the pulse, respiration, temperature, etc.) the diagnosis, prognosis and therapie is very much facilitated.

EDITORIAL.

OPENING OF VETERINARY COLLEGES.

The month of October in our country is, for the medical profession, one of certain importance, as it is during this month that medical schools begin their winter sessions; and that, restored by the rest of summer or fall vacations, the faculties of the numerous medical colleges of the United States are ready to resume their work before their constantly enlarging classes of students.

Veterinary colleges, following the example set them by their sister institutions, have also taken this month for the opening of their courses of lectures; and in New York as well as in Canada, the veterinary colleges have had their openings, and are now more or less at work. We publish the reports of these exercises as they took place at the American Veterinary College and at the Montreal School, which are the only ones which have reached us so far. Our friends in Toronto will probably favor us with a similar notice, and as soon as it is received we will present it to our readers.

As far as we are able to judge, New York and Montreal have their lecture-rooms well filled with students, and their faculties feel satisfied with the result crowning their efforts.

In both institutions, the different States of the Union are well represented, and students from north and south, from east and west, have matriculated, and by their attendance at these colleges prove that the importance of the profession and the opportunity offered to young men for a lucrative and honorable position in life, begin to be better appreciated by our countrymen. This is most encouraging to those whose efforts have been made in that direction, and must be a gratifying stimulus to keep them

working with courage for the advancement of a science which has been for many years so sadly neglected in the United States, much to the detriment of our live-stock breeders.

PLEURO-PNEUMONIA.

We begin, in this number, the publication of a translation by Mr. F. S. Billings of a German article on pleuro-pneumonia, in which the subject of inoculation seems to be the principal object. This, we have no doubt, will prove interesting to our readers, as many, we know, are averse to this operation, either by reading, by practical observations, or, perhaps, some by preconceived opinions. We had the honor, some time ago, to present a paper on this subject before the New York State Veterinary Society, in which we reported as far as we could the results of the observations and conclusions arrived at in many European countries; but we fear that our voice did not possess enough power to convert the non-believers in inoculation. To them we would recommend a close reading of Dr. H. Putz's article, which Mr. Billings has so kindly sent us for the pages of the REVIEW.

VETERINARY COLLEGES IN NEW YORK STATE.

In July, 1877, we announced the resuscitation of that institution whose doors had been closed since 1875. After an existence of about thirteen months, we heard that this school, "though the only institution legally chartered and authorized to grant diplomas," had once more closed its doors, and though another attempt at a second revival has been made, we understand that it yet remains closed for want of * * medical attendance. From the scattered officers of that institution another has sprung up under the name of the Columbia Veterinary College, organized under the same law as the American Veterinary College—a law which recently proved as satisfactory for such a purpose as, some short time ago, it was pronounced valueless and inefficient.

VETERINARY HONORS.

We take pleasure in announcing the creation of an important position in the Board of Agriculture of the State of Illinois. Dr. W. H. Parren, well known in that State by his large practice and numerous writings in different agricultural papers, has been appointed State Veterinarian to the Board of Agriculture.

One of the graduates of the American Veterinary College, Dr. C. B. Michener, holds a somewhat similar position in Pennsylvania.

Prof. James Law, of Cornell University, has been for many years consulting Veterinarian to the Agricultural Society of the State of New York.

These official appointments tell how, by degrees, the importance of the veterinary profession becomes realized by our State governments. Is not that the first step towards the formation of a general governmental Veterinary Department in connection with the Agricultural Bureau at Washington? Until this is formed, can we hope to see our American sanitary service well regulated?

OPENING OF COLLEGES.

AMERICAN VETERINARY COLLEGE.

The opening exercises for the regular winter session were held in the lecture room of the College buildings, on the 30th of September. Students, trustees, physicians and friends of the institution had assembled at 8 o'clock, P. M., and in such a number that though the room was crammed full, many had to remain standing in the hallway, satisfied to honor in this way by their presence the ceremonies which were about to take place. President Samuel Marsh opened the meeting by a few short and well applied remarks, relating to the success of the institution and to the very prosperous condition in which the College found itself after such a short time since its foundation; congratulating the

members of the faculty on the results which had thus far crowned their efforts. He pointed out the fact of the necessity which was brought before the Board of Trustees of taking steps at once for obtaining larger and better accommodations for the class of students which were likely to fill up the rooms of the College, a step which in fact he considered as of vital importance to the College.

Hon. Henry Bergh, the worthy President of the Society for the Prevention of Cruelty to Animals, was then introduced. He delivered one of his good and characteristic addresses, taking occasion to bring forward the importance of the veterinarian in the very work in which he had been himself engaged for so many years.

Hon. E. T. Gerry took the floor afterwards, and, referring to the bill which had been presented last winter before the legislature at Albany, with the object of obtaining a better regulation for the practice of veterinary medicine in the State of New York, strongly recommended united action on the part of veterinarians and of the different schools in the country, saying he had no doubt that the bill would be passed by the next legislature.

Prof. F. D. Weisse, Secretary of the Board of Trustees, informed the class that the presentation of credentials and the examination for matriculation would take place the next morning, and the regular lectures would begin on the second day of October.

A general visit to the different departments was then made by the company present.

At the examination which took place next morning, twenty-one new students were allowed to enter their names on the matriculation book, the following States being represented: New York, New Jersey, Massachusetts, Pennsylvania, Illinois, Maine, Virginia, Iowa, and one from the West Indies.

The prospects are that a class of 30 or 35 will attend the lectures during the winter session, ending in February, 1879.

MONTREAL VETERINARY COLLEGE.

The opening lecture of this College was delivered last evening by Professor Wm. Osler, M.D., M.R.C.P.L., before a large

and appreciative audience of students, medical men, and veterinary surgeons. The subject chosen was "Comparative Pathology," and being one to which the lecturer had given special attention, more particularly during the past summer, he having been engaged with Dr. Burdon Saunderson and Dr. Klein, at the Brown Institute in London, specially on this and kindred subjects, a more than ordinary exposition of the present position of this study was expected, and the audience were not disappointed. The Dr., after defining the subject, Pathology, as being the physiology and microscopic anatomy of disease, went on to explain the theories and results of recent investigations of *contagium vivum*; the discovery of *bacteria* in the blood of diseases of the anthrax variety; the recent discovery of these organisms in the blood in the so-called hog cholera, or, as it was more properly named, "*contagious pneumo-enteritis*" by Dr. Klein. The Dr. next referred to the unjust "Contagious Diseases (animals) Act" of 1878, recently passed in England, to come into force on the first of January next, by which our cattle trade was to be seriously interfered with, if not ruined. All American cattle, including Canadian, were to be slaughtered at the port of entry. In Canada we have no contagious diseases, and it is manifestly unfair to include our cattle. In the Western States, it is true, they have the *splenic fever* (Texas fever) and *pneumo-enteritis* in pigs. Our Government should lose no time in placing the matter in proper veterinary hands; all out-going stock should be inspected by qualified inspectors. He referred to the advantages already derived from the quarantine at Point Levis. An animal affected with hog cholera arrived, and was detained by Mr. McEachran, the inspector, and thus prevented from spreading a virulent and contagious disease among our stock. The Government should do everything to render the quarantine more efficient. The lecturer concluded his lecture by explaining to the students the nature of their studies, urging them to entertain a high appreciation of scientific study, to be regular in their attendance, and to adopt a systematic disposition of their time, and to take advantage of the opportunities afforded them while students here.

Prof. McEachran followed with a few words of welcome to

the students. He was happy to find that year by year the number increased. This session showed an increase of ten over the previous one. Over thirty had already enrolled—thirteen from the United States. Illinois, Wisconsin, Massachusetts, New York, Pennsylvania and Vermont had sent their representatives. Toronto and Ottawa were represented also, and he was particularly glad to find no less than thirteen French Canadian students among the number. On account of the prevalence of the "boat race fever," he had yielded to the request of the majority of the students, who had taken it, and the lectures proper would be postponed till Thursday morning, when he hoped all would settle down to the active duties of the session.

—*Montreal Herald, Oct. 2d,* 1878.

PRESIDENT BERGH'S ADDRESS

AT THE OPENING EXERCISES OF THE AMERICAN VETERINARY COLLEGE.

Gentlemen of the American Veterinary College:—At what precise period of time this world of ours was created, is still, and ever will remain a mystery to human knowledge.

That it was created, is the earliest fact we have in our possession; and it is even probable that it was created before time itself began.

Pending however its formation, the elements of which it is composed, are supposed by some philosophers to have been floating about in infinite space, but all the while gravitating towards one common centre.

When these inert masses of matter had finally been united; darkness, the most heavy and impenetrable, pervaded all things, until the fiat of the Almighty went forth—"Let there be light!"

With light came heat, and with heat came vegetation, and after vegetation came animal life—and last of all came Man!

Such was about the order in which the globe we inhabit was organized, and you will not fail to recognize especially one promi-

nent fact, namely: that mankind was the last work of the Deity.

It would seem from this Divine ordination, that all these, and countless other elements in the existence and well-being of our race, were all sent in advance of man's advent, to prepare for his reception.

Well, at length he came, and what followed?

So far as dumb animals are concerned, I do not hesitate to say, that they would have remained better off, if this last creation had been omitted.

By the Bible we are informed, that prior to his arrival, disease, suffering, and death were strangers to our planet; that the lion and lamb lay down together—and that fear and cruelty were unknown.

Such, briefly, was the condition of things, until this paragon came upon the scene; when soon thereafter all became changed!

By reason of his perverseness the whole face of nature was speedily transformed into what we now behold it—the air, the earth, the sea, and all they contained, arrayed themselves in hostility to one another—and purity and peace were supplanted by malice, violence, and death!

The general devastation and ruin which have ensued, would require years to describe. I propose to dwell only a little while on their consequences to the *lower* animals, as they are termed.

And at the start, I am met by the logical fact, that had man not been created, your profession, gentlemen, would have been unnecessary.

But he did come, and along with him came spavin, glanders, fractures, castration, etc., etc., and finally, that scientific deviltry, known as vivisection!!

Such, gentlemen, and myriads like them, are the claims whereby the immortal being, man—whom we are told was made in the image of his Creator—constitutes his right to pronounce himself the superior animal.

It would be a useless waste of time to expose to you the fallacy of this arbitrary and illogical assumption in its physical and moral aspects; for your profession, which brings you into such

close relations with those dumb servants of mankind, have already demonstrated to you the truth, that, by their physical power, intelligence, docility, and inappreciable utility, and devotion to the interests of our race—they have quite as much to do with the existence and progress of civilization as man himself.

Can you think of a single relation in life, where in some degree they are not represented ?

What would become of agriculture, architecture, and nearly all of the mechanic arts without them ? Who drag the plow, nourish the soil, and spare us the pains of locomotion while they live; and when dead feed us and clothe us with the products of their bodies ?

We are told, that with the creation of Eve, the Almighty Maker of all rested from His labors.

Well, let us contemplate for a moment a beautiful woman. Let us begin with the tiny shoes upon her feet; the robe of dazzling silk; the minion gloves upon her hands; the pearls which hang around her alabaster neck; the plumes which ornament her hair; the costly India shawl, and cold-defying furs, and sometimes even the ruby color of her cheeks, and tell me whence do they all come?

And then again, when the fatigues of the day are over and weary nature seeks repose, is it not upon feathers, wool, and hair that aching limbs recline ?

In their moral characteristics too, man's arrogant assumption of superiority is conspicuous; and this truth, gentlemen, your daily experience and observation must confirm.

In their affection and defence of their young—nay, their skilful and admirable strategy in circumventing the cruel schemes of their great adversary, man, frequently they astonish and confound us.

The lioness, for example, robbed of her whelps, causes the wilderness to ring with the proclamation of her wrongs; and the little bird whose nest has been invaded, fills the groves with notes of sad complaining.

To evade the pursuit of the sportsman, the partridge covers up its young with the grass of the field; and even when no other

means are practicable, suffers itself to be killed at a distance from its beloved progeny!

All this seems too much like romance to be real, but to the confusion of our race it is true.

Yes, all this is true—and more; by man's revolting barbarity—aided perhaps by the necessities of his fallen condition—the entire animal race fears him, and flees his presence, with well-founded apprehension.

And yet these humble beings do exist, and can better exist without us than with us, while we, and all the civilization of which we boast, would perish probably in a twelvemonth, were they one and all to be extinguished!

It is a well-ascertained fact, that wherever the horse is not found, civilization does not exist.

If I thus seem to occupy too much of your time with these considerations, it is to impress upon your minds, with all the force I am able, the great moral responsibility which rests upon your profession, of carefully fitting yourselves for the performance of a task which involves the amelioration or infliction of such tremendous sufferings, as well as enormous destruction of property, which either ignorance or want of humane feeling may entail.

According to official statistics, fifty millions of animals are slaughtered annually in this country for food, exclusive of those killed for other purposes.

In 1870, eighty-five millions of animals labored for our support, which, estimated in day's work, at fifty cents per day for three hundred days, makes the prodigious total of four hundred and twenty-five millions of dollars annually! But then, gentlemen, this sum, vast as it is, is only a fraction of the tremendous pecuniary benefit these despised and abused creatures procure us, and is derived from three races of animals only, to wit: the horse, the ox, and the mule.

It is a fact as strange as it is abhorrent to every sentiment of justice and gratitude, that of all the lower animals, the one which is most useful, profitable, and indispensible to mankind, is the most abused, and that is the horse!

It is more particularly towards that noble creature that your scientific and humane practice is directed; and the wisdom which dictates that earnest and exceptional solicitude, has a ready explanation in the great popular panic, which a few years ago manifested itself, when this country was threatened with the loss of the labor of that unequalled servant.

In order to protect him from harm, and to repair injury by the least painful methods, you penetrate the mysterious economy of nature, and interrogate the sources of life and motion. To accomplish this laudable purpose, and prevent waste and agony resulting from the ignorance and insensibility of impiricism, the experienced gentleman, Dr. Liautard, to whose untiring perseverance this College mainly owes its existence, has placed it within your power, gentlemen, to obtain the necessary skill.

Until within a very few years the members of your profession were rudely denominated "Horse Doctors."

The general tendency of the minds of ignorant, prejudiced, and vulgar persons, is to ridicule that which their biased understandings exclude an intelligent investigation of.

And no more potent element, for the moment, can be employed, as I have learned by personal experience, than ridicule.

But, like every other effort directed against the immutable laws of justice and nature, they run their ephemeral course and subside, with frequently no other evidence of their existence than the strength which their senseless opposition has imparted to the right.

Perhaps, in connection with this subject, I may be pardoned for illustrating the truth of the observation I have just made, by a brief reference to the institution over which I preside:

Born amidst the depressing influences of public apathy and indifference, it was destined to encounter a hostility, all the more pronounced by reason of its presumed infringement of the rights of property.

The unreflecting and brutal world had been so long accustomed to beat, mutilate, and kill the animals over which they exercised the dominion of ownership, that any legal interference with that time-*dis*honored privilege, was regarded as a most fla-

grant violation of the fundamental principles of the Constitution.

And I may here parenthetically remark, that that sacred instrument seems never so terribly violated as when it interferes with a few citizens doing whatever they —— please.

But that reformer, Time, at length overcame this factitious but powerful adversary, until now he has disappeared almost entirely from the conflict, and we have only the logical controversies of divergencies of opinion and personal interest.

And a similar experience has also been yours; for the "Horse Doctor" has disappeared, to be replaced by the veterinary surgeon, who now takes rank by the side of the human practitioner.

And I fail to discover, gentlemen, any essential difference between the principles and purposes which underlie the human and animal medical science—if I may employ such a term.

Both are based on a knowledge of the laws which govern animal life; the blood, bones, and tissues of both are fundamentally identical and subject to the same influences and vicissitudes, and the universal climax, death, betrays no other deviation than is presented by the name or form of the creature.

If any doubt exists as to the truthfulness of this theory, it is refuted by the cruel experiments of the bloody operators on the quivering bodies of dumb animals, performed in the outraged name of science.

If the Maker of all things had given to the beast an organism totally differing from that of man, of what avail would be their needless and criminal investigations?

No; pain and death have but one significance, whether the subject be man, or be it the speechless, uncomplaining brute.

The consequences to the public of a better education in the laws of animal medicine, are only beginning to be fully realized.

Not only is the skill of the veterinary practitioner applicable to diseases and accidents of domestic animals, but his learning and experience should be employed by the State in a sanitary point of view.

That the national health is greatly deteriorated by the inhuman treatment of animals while in transit upon railroads and otherwise, by which the flesh becomes vitiated so as to be the

source of numerous fatal diseases, no sensible physiologist or surgeon will deny. Can there be a more exalted ambition or duty, than to educate young men to stand as sentinels between the unsuspicious public and the diseases and death which the cupidity of corporations engender?

To this College and similar ones, let us hope that the time is approaching when the State will address itself, for surgeons, well-trained in the diseases of animals destined for human consumption; for millions of money are annually sacrificed, to say nothing of the loss of health and detriment to moral character, by reason of the absence of just such officials as it is the province of this institution to supply.

And now, gentlemen, I desire to approach with all the gravity which the subject demands, the practice of that art which it is your aim, let us hope, to perfect yourselves in.

It is an undeniable fact, that the malpractice of ignorant pretenders in diseases of dumb animals, has crippled and killed more creatures than all other causes combined.

Owing to the absence of any restraining power on the part of the law, the most densely stupid blockhead may, after a brief experience in a farrier's shop, nail up his "shingle," as the dishonored morsel of wood, bearing his name upon it, is called, and henceforth insult science by calling himself a veterinary surgeon!

I beg you to believe that I am not exaggerating when I say that, in my capacity of assistant public prosecutor, numerous instances have occurred, where the witness—such a one as I have described—has been put upon the stand, who could not correctly pronounce, and absolutely did not know the meaning of the word indicating the profession to which he claimed that he belonged. No one knows better than you do, the murderous consequences of the treatment inflicted on helpless dumb animals by these senseless malefactors.

Neither the spirit of mercy, nor an admission of the fact, that gentle treatment, along with the curative principles inherent in nature, may effect a remedy, have any weight in their crude diagnoses.

Poisons the most active, blistering, firing, purging, along with

the knife, the scalpel and the saw, are the barbarous instruments which these merciless ruffians employ to torture the hapless animal with, and astonish the humane and terrified beholder.

The hewing of granite in the prisons of the State, or the congenial treadmill, are the sole occupations which their barbarity adapts them to.

To put a stop to these inhumanities, as well as their kindred abomination—vivisection, the Society I represent has made repeated and earnest applications for redress to the Legislature, through its counsel, Mr. Gerry, and if these miserable torturers of animals, and destroyers of valuable property are ever to be reformed or annihilated, it will be through the enlightening influence of Veterinary Colleges like this.

The feet of the horse are to him what the foundations are to a house. Let them be defective, and neither of them can stand long or perform the duties required of them. And yet no part of that invaluable animal is of half the importance as his feet. He may be blind, wind-broken, spavined and consumptive; but so long as his feet, the insensible foundations of his animal superstructure, are intact, he can be rendered useful and profitable by judicious patching, nailing and repairing, like to the decaying edifice, whose base is rocks.

With an incredible disregard, however, of this obvious fact, the farrier's first act on the entry of the animal into his shop, and after having saluted the friendly creature, perhaps, with a blow from a convenient rasp or hammer, is to commence slicing off huge pieces of the hoof, until, not unfrequently, the muscular tissues are visible !

Until very lately there was to be seen in almost every shop an infernal machine named a buttress, a sharp instrument formed liked a miniature shovel, with which the iconoclastic operator exercised his destructive vandalism.

To the professors of Veterinary Science, here and eleswhere, I would make the earnest appeal, to effect the abolition of a practice so manifestly absurd and ruinous. A rasp in the hands of an intelligent workman is nearly all that is required to level the hoof for the reception of the shoe, without having recourse to the

dangerous instrument alluded to, or the equally unnatural practice of burning the shoe into the horn.

If farriers will not listen to the dictates of reason, nor heed, gentlemen, your scientific remonstrances, then owners of horses should withdraw their patronage from establishments whose practices are in such direct violation of the plainest precepts of anatomy.

I should trespass too greatly on your time and patience, were I to enumerate even a fourth part of the perverse blunders and ignorancies of these self-sufficient tyros in their treatment of that creature, which may be justly regarded as the greatest acquisition man has ever made to civilization. I will, however, ask your further indulgence while I refer to one or two other objects affecting the health and comfort of the horse, the use of which may be solely attributable to the vanity and ostentation of its owner.

I allude to the check-rein and the terrible bits now in use. The former invention, if originally designed as an instrument of punishment, or to prevent the animal from freely performing his work, by allowing him the use of his head, should be regarded as a perfect success.

The original implement was bad enough, but a modern inquisitor, named Jackson, has produced another which cannot fail to rejoice the hearts of all persons who take pleasure in torturing their animals while making their rounds of the Park. It is more immovable than its predecessor, and possesses—to all such—the additional attraction of pressing upon the brain and skull of the animal, while it holds its mouth wide open, and prevents the natural operations of the saliva.

I am unable to say whether its inventor has applied to Washington or Sing Sing for a patent, but he is certainly worthy of the highest honors the latter establishment can bestow. This, along with the double bits forced into the mouth of the horse, occasion to that generous and uncomplaining animal, an amount of suffering, which, in ancient times, would have been regarded as a first-class punishment for the vilest of animals.

One word more, gentlemen, and I have done.

Human laws may reach and punish a few of the most atrocious acts of cruelty, but there are many others which, like vivisection, along with those I have named, escape their cognizance, and owe their existence to the careless apathy of the public.

The spirit of humanity must elevate its voice, and inculcate its precepts in the school, the college, and the lecture-room; in the courts of justice and in the pulpit. It must speak through the mouths of poets, philosophers and physiologists; it must invoke the *press* to stamp its dictates in the indelible characters of ink and type, and give them passport over the world. It must implore it to brand, with disreputable stigma, every cruel deed; that those who are not to be allured to mercy by high and generous motives, may be deterred from cruelty by the dread of *shame!*

The Hon. Elbridge T. Gerry, counsel to the American Society for the Prevention of Cruelty to Animals, followed Mr. Bergh with some well-chosen remarks, illustrative of the address which preceded them.

His legal anecdote relating to Mr. Smith, the "Vi-tinnery Surgeon," who never wrote his name in his life, but always made his mark; and who had never been in any of the criminal *institutions* of the State, was particularly rich with humor.

VETERINARY TITLES.

By D. McEachran, F.R.C.V.S., Montreal Veterinary College.

From time to time discussions on this subject have appeared in the columns of the journals of the profession, which to outsiders must give the impression that there must be something wrong in the constitution of our schools, or the education of our pupils, when so much ignorance exists as to the titles which the possession of certain diplomas confer on the holders thereof.

I am sorry to find that similar discussions are in progress in this country, and, unfortunately, conducted with unseemly bitterness.

I have been asked by a professional gentleman in New York to reply to a number of questions having special application to another member who it is claimed wrongly uses certain letters appended to his name. Having no wish to interfere in their personal quarrels on the subject, yet being desirous that the profession in America should know the rights of professional titles, I take the liberty of placing the following facts before them, through the columns of the REVIEW:

THE ROYAL VETERINARY COLLEGE,

GREAT COLLEGE STREET, CAMDEN TOWN, LONDON.

This teaching college was founded in 1791, and from that time up to the present has had the power to issue diplomas to qualified students, who had the right to call themselves Veterinary Surgeons, and affix the initial letters V.S. to their names. I think, however, that this examination and diploma has been discontinued since the charter was granted to the Royal College of Veterinary Surgeons, and hence we find all the students of the Royal Veterinary College, London, are members of the Royal College of Veterinary Surgeons and use the letters M.R.C.V.S., in consequence.

THE EDINBURGH VETERINARY COLLEGE.

This college properly dates from 1819, a year after Professor Dick obtained the diploma of the Royal Veterinary College. Its connection with the Highland and Agricultural Society, however, dates only from 1823, when that Society, recognizing the usefulness of the young and struggling school, extended their patronage to it, and undertook the appointing of the Examining Board and granting certificates of qualification.

The success of the Edinburgh Veterinary College was thus assured, and the Society's certificate was accepted both by the British Government and the India House on the same footing as the diploma of the London school, both being eligible for commissions in their respective armies. The graduates of Edinburgh also styled themselves Veterinary Surgeons and affixed V.S. to

their names; the V.S. of London usually adding *L*, and the V. S. of Edinburgh, *Edin.* Up till 1844, when the Royal College of Veterinary Surgeons came into existence, no other affixes were made use of, correctly at least.

THE ROYAL COLLEGE OF VETERINARY SURGEONS.

This corporation is not a teaching college, as many imagine, but the representative body of the profession, chartered by Government and granted certain powers for the purpose of advancing and protecting the interests of the profession.

In 1844, on the application of the following V.S's., viz: Thomas Turner, William Joseph Goodwin, Thomas Mayer, Sr., William Dick, William Sewell, Charles Spooner and James Beart Simmonds, a charter was granted to what has since been known as the Royal College of Veterinary Surgeons, in which it was declared, that "the veterinary art, as practiced by the said body politic and corporate, shall from henceforth be deemed and taken to be and recognized as a profession; and that the members of said body politic and corporate, solely and exclusively of all persons whomsoever, shall be deemed and taken and recognized to be members of the said profession, or professors of the said art, and shall be individually known and distinguished by the name and title of Veterinary Surgeon." Among other privileges the charter empowered the council "to fix and determine the times, places and manner of examining students who shall have been educated at the Royal Veterinary College of London, or the Veterinary College of Edinburgh, or such other Veterinary College as hereinbefore mentioned, and who may be desirous to become members of the said body politic and corporate; and for regulating the nature and extent of such examinations; and for the appointment of persons to examine and determine upon the fitness and qualifications of such students, as members of the said body politic and corporate; and for fixing and determining the sums of money to be paid by such students, either previous to their examinations or upon their admission as members of the said body politic and corporate." "No professor of any or either of such colleges as aforesaid, of which the person desirous of becoming a member of

the said body politic and corporate shall have been a student, shall in any way or manner act or interfere as the examiner of such person; and that all qualified students who shall have passed the said examination to the satisfaction of the examiners, shall have the right to claim admission as members of the said body politic and corporate."

As stated in the published memoirs of Professor Dick, page XLI. "Although Professor Dick had been one of the petitioners for the charter, as he stated at the first general meeting held under it, he was not to be held as homologating it by any part he might take in the proceedings; the reason being that several clauses affecting him had been introduced into it, and others omitted without his knowledge or consent. He showed himself willing, however, to afford every facility to the working of the charter, so far as the Edinburgh Veterinary College was concerned; and for three years after the charter was obtained, the Highland and Agricultural Society's certificate was not granted to the students who passed the examiners appointed by the Council of the Royal College of Veterinary Surgeons." For the reasons given in full in the memoir above referred to, Professor Dick severed his connection with the Royal College of Veterinary Surgeons, and the Highland Society again conferred their certificate, which continued to be recognized by the Government and the India House.

The withdrawal of Professor Dick from the Royal College of Veterinary Surgeons did not prevent any of his students who chose from becoming members of that body; in fact, a certain proportion of them every year became members of the R. C. V. S. For the convenience of the Scotch students, a board of examiners was appointed to meet once a year at Edinburgh.

Successful candidates from either teaching college, passing at either board, were admitted and declared to be members of the Royal College of Veterinary Surgeons, and could use the initials M.R.C.V.S. The addition of either L. or E., is as unnecessary as it is stupid, there being only the one College of Veterinary Surgeons in Britain. Eighteen months ago, the R. C. V. Surgeons, with a view to encourage higher education, applied for and ob-

tained an amended charter, empowering them to confer a higher degree than membership, entitled Fellowship, the initials being F.R.C.V.S.

The unsatisfactory state of affairs in relation to veterinary diplomas in Britain for many years has proved a great injury to the profession, giving rise to much discord and hard feeling, but is happily soon to be terminated by arrangements which are in progress by the Highland and Agricultural Society of Scotland, for admitting the Society's certificate-holders as members of the Royal College, and terminating the examinations of the Highland and Agricultural Society, so that before long hundreds of those who at present have only the right to affix V.S., Edin., may legally, if they desire it, without examination obtain the right to use M.R.C.V.S., and let us hope that L. and E. will no longer be added, but all being one united profession, will endeavor to prove their college motto, *Vis Unita Fortior.*

CORRESPONDENCE.

Editor American Veterinary Review:

SIR:—During the last winter session of the American Veterinary College the students entertained the idea of organizing a society for their mutual advancement in veterinary science, and then appointed a committee to endeavor to give the suggestion a practical result. Having obtained the approval of the Faculty, the students, at a meeting held on the 18th inst., organized the Medical Association of the American Veterinary College, electing as officers Prof. A. A. Holcombe, D.V.S., President; T. B. Rogers, Vice-President; A. S. Brigham, Treasurer; and R. A. McLean, Secretary. At the meetings, which will be held every Friday evening in the lecture room of the College, original papers will be read by the senior students. It is hoped that by the discussions raised upon these different subjects, by the reports of cases, and of the latest innovations in veterinary medicine, that not only will our knowledge of our adopted profession be materially increased,

but that a desire will be developed amongst us, thus early acquired, which will be retained during our professional career, to make original researches regarding the pathology of such of our diseases as are not yet fully understood.

Yours, respectfully,

R. A. McLean, *Secretary.*

EXCHANGES, BOOKS, JOURNALS, ETC., RECEIVED.

Communications.—E. Maik, V.S. Wm Cutting, V.S. F. S. Billings. G. Penniman, D.V.S. J. C. McKenzie, V.S. L. Plageman, M.R.C.V.S. L. T. Bell, D.V.S. R. McLean. C. H. Stoeker, D.V.S. R. Wood, V.S.

Books and Pamphlets.—Transactions of the Department of Agriculture of Illinois; 1876—Vol. XIV. Annual Commencement Medical College of South Carolina. Die Kuhmilch und deren Prüfung, von Alois Koch.

Journals.—Scientific American, Hospital Gazette, Medical Record, Country Gentleman, Turf, Field and Farm, National Live Stock Journal, New York Rural, American Agriculturist, Prairie Farmer, Practical Farmer, Maine Farmer. Journal de l'Agriculture, Receuil de Medecine Veterinaire, Clinica Veterinaria, Archives Veterinaires, Mouvement Medical, Revue fur Thierheilkunde und Thierzucht.

Newspapers.—Western Sportsman, Western Agriculturist, Our Dumb Animals, Vermont Record and Farm, The Ploughman, The Leader (Canada), The New England Farmer.

AMERICAN VETERINARY REVIEW,

DECEMBER, 1878.

ORIGINAL ARTICLES.

ATROPHY OF THE PLANTAR CUSHION,

ITS CAUSES, SEQUELÆ AND TREATMENT.

BY G. CHENIER. TRANSLATED BY A. LIAUTARD, M. D., V.S.

L'affection, appetée classiquement encastelure, procide de dedans en dehors.	The affection classically called hoof-bound, proceeds from inwards outwards.

The foot! Organ of rest and of progression. Nature, by a wonder of its creating power, has granted to it, two properties, solidity and elasticity, which at first sight seem incompatible.

It is not astonishing that an organ so complicated in its structure and the arrangement of its parts, so important in the duty it has to perform, should have been on the part of veterinary observers the object of investigations and deep theories. And therefore are there few subjects in which researches of the physiologist and the practical observer prove to be more fecund in results.

Nothwithstanding this, and notwithstanding the important works published on the subject, and specially the publication of a true scientific and literary monument from the so well authorized pen of M. H. Bouley, the field of studies offered by the foot is

so great, the phenomena that take place in it, either normally or pathologically, are in great part so obscure, that if the anatomy of this organ is well known its physiological functions are not yet well defined, and its pathological history remains incomplete. We need no better proof of this than the diversity of opinions given on the nature of the diseases of the foot, their etiology and even their treatment.

Therefore it is not inopportune to return to the subject.

To present some considerations of normal physiology, which will be the *criterion* of the pathological theories relating to some diseases of the foot, and which we will substitute for those already admitted, because they answer better for scientific exigencies, and because they are corroborated by practical results: such is the object of this article.

Heretofore the atrophy of the plantar cushion has been considered as the consequence of the contraction of the wall. We believe that this is an error and that the cause was mistaken for the effect. To try and correct this assertion, *such* is our object.

I.

OF THE REPARTITION OF THE PRESSURE AT REST.

The pressure transmitted to the inferior extremity of the leg by the metacarpal or metatarsal bone, which is the effect of the weight of the body alone in the standing position, or of this weight increased with the effort of impulsion during progression, is divided at the fetlock joint, in consequence of the change of direction of the end of the leg. This division gives rise to two pressures or new powers: one which takes the direction of the phalangial axis; the other which is thrown upon the posterior tendinous apparatus.

A.—This one, to be able to resist the action of the power which acts upon it, offers an anatomical disposition which insures for it an extreme solidity, a great force of resistance. Let us, in relation to this fact, look at some anatomico-physiological peculiarities.

In the fore, as in the hind leg, the tendon of the perforans

is reinforced by a thick fibrous band rising from the posterior ligament of the carpus or of the tarsus. The superficial flexor of the phalanges receives also a band of reinforcement; but its disposition is not the same in both extremities. In the anterior, the tendon of the preforatus is reinforced at its origin "by an enormous fibrous production rising from the eminence of insertion situated downwards on the posterior face of the radius;" * in the posterior leg, the reinforcing band is given from the thick fibrous layer depence of the tibial aponeurosis. These two fibrous bands perform toward the tendons to which they unite, an action analogous to that of the bands which from the post-carpal and post-tarsal ligaments unite to the tendons of the deep flexors; like those, they prevent stretching of the flexor tendons and allow the corresponding muscles to relax completely while in the standing position. Let us add that these reinforcing bands are powerfully assisted by the suspensory ligament.

On the other side, if one studies comparatively the anterior and posterior extremities, he will find in them, viewed as to their functional aptitude, one of those magnificent proofs of the harmony with which the Creator made everything—in the anterior legs, whose principal action is in standing, very voluminous bands of reinforcement; in the posterior, principal agents of the impulsive power in progression, a third muscle, the oblique flexor, an auxiliary of the perforans muscle.

There is another anatomical disposition to which but very little importance has been given, and whose play, however, is far from being useless in the accomplishment of the acts of locomotion. By the insertion of its two terminal branches, on each side of the superior extremity of the second phalanx, the tendon of the superficial flexor throws upon the phalangial axis, after reducing it, the fraction of pressure of rest that it carries at the fetlock. Again, this organ constitutes at the point of origin of its two terminal branches, a true pulley upon which in passing over it the perforans tendon rests in such a manner that the perforatus carries again over the bony column, not only the pres-

* A. Chauveau.

sure thrown upon itself, but also a part of that resting upon the perforans. Let us mention also that the part of pressure of rest thrown upon the flexor tendons is so much greater that the phalangial axis is more oblique; "in such a way that in a given time of the pressure, when the phalangial axis assumes an almost horizontal direction, as, for instance, in the actions of fast running, the entire mass of the body may be supported by these elastic cords."*

B.—The other portion of the pressure of rest, that which we have seen following the phalangial axis, arrives at the inferior extremity of the os coronæ, after being reinforced on a level with the superior part of this bone, by the traction exercised at that point by the perforatus tendon. Let us add that the action of this last power takes place from forward backwards, while that of the original pressure acts upon the os pedis from above below, and from backwards forwards.

The intensity of these two forces—that rising at the articulation of the fetlock and following the axis of the bony column, and that which is thrown back on that column by the perforatus —is, so to speak, inverse; the straighter the phalangial column is, the weaker this second force, and the stronger is the action of the first; while reciprocally, the more oblique is the phalangial column, the more powerful is the action of the force thrown back by the perforatus upon the bony column.

In both cases, the sum of these two forces is transmitted to the pedal apparatus in a different manner, whether the phalangial column is straightened or oblique. In the first case, when, for instance, the leg is ready to leave the ground, the pressure of rest is received almost entirely by the os pedis. When, on the contrary, the phalangial column is bent backward, this pressure carries its action on the navicular bone. Then, if we bear in mind that it is precisely at this moment that the power, whose action takes place from forward backward, is at its maximum of strength, we are brought to the conclusion that the pressure then acting on the navicular bone, is enormous.

Upon the mode of repartition of the pressure of rest we do

* H. Bouley, Traité de l'Organisation du pied.

not then agree with M. H. Bouley, who admits a maximum of intensity of action of the os coronæ upon the ungual phalanx, when the metacarpo-phalangial joint is closed at its extreme degree, and that, on the contrary, it is when the two first phalanges are on the same line with the metacarpus, and receive integrally all the pressure, that the os coronæ "throws back on the navicular the greatest sum of the effort it supports."

One may become well satisfied with our opinion by making on a foot two antero-posterior sections, sufficiently distant from each other so that the lateral regions only are involved. By this experiment, one sees the navicular lowering progressively by degree as the phalangial axis is inclined, and raising to the level of the articular surface of the os pedis as this phalangial lever is straightened. Made upon the cadaver, this experiment would have only a specious value, if one infer from it the degree of lowering of the navicular bone. For that reason we will remark that we draw from it no other indication than that of determining the conditions in which this bone receives a portion, more or less great, of the pressure of rest.

Besides, our opinion is confirmed by the attitude of the animal when very lame. If the regions of the foot are very painful, as in suppurative corn, punctured wounds, involving the plantar aponeurosis or even the plantar cushion only, what do we see? The phalangial lever brought on the same line as the metacarpus. What on the contrary takes place in acute laminitis, when the os pedis, executing by its anterior border its displacement downwards and backwards, happens to compress the velvety tissue? To come to standing position, the animal waits until the phalangial lever be lowered, so as to report as much as possible the pressure of rest on the navicular bone and the plantar cushion. To resume, in supporting at given steps of the standing, a great portion of the weight of the body, increased during locomotion by the force of impulsion, the navicular bone plays a very important part in the locomotion. And from this, with some exaggeration and by giving a different explanation of the fact, it has been said that at given times "it was on that small bone that all the sum of pressure was con-

centrated."* We will later draw conclusions from this fact.

It remains for us to examine how the os pedis transmits to the intermediate horny box, insensible between the ground and the living tissues, the pressure thrown upon its articular surface. Does the os pedis come down the horny box, or does it move backwards by its posterior border? Reasoning and observation of facts prove to us that it is immovable in the hoof. Let us try to show it:

A.—If the os pedis was movable and could come down in the hoof, it would compress the velvety tissue, and, as a consequence of its delicate texture, this would be crushed, and severe pain produced. It is true that in the posterior region of the foot the plantar cushion compresses the layer of that tissue underneath without injuring it. But the velvety structure of the anterior parts of the foot is interposed between two hard bodies, the upper one especially, while that of the posterior part is in connection superiorly with an organ, supple by excellence, the plantar cushion, at least in the physiological condition, and inferiorly in a great part of its extent with the deep layers of the frog, also very elastic.

B.—If the os pedis was movable, the pedal apparatus would not have offered the rigidity necessary to the impulsion, in an animal strong and rapid in its actions as the horse is.

C.—If the sole had had for duty to be a means of support for the os pedis, this bone would come down in a marked manner in cases where the sole is entirely removed, as in some diseases, or after surgical operations. Nothing of this sort takes place.

D.—The navicular bone is, we know, independent, at least in some measure, of the os pedis. This independence would have been unnecessary if the third phalanx could, like the navicular bone, be submitted to these motions of lowering and raising.

E.—If this os pedis was moving backwards, the most favorable moment for this would be when all the sum of pressure is concentrated upon it, that is when the other phalanges are straightened in their axis. But at this moment this becomes impossible because the tendon of the perforans muscle, being attached to the semi-lunar crest, has a tendency to straighten this bone.

* Merche—Principaux Systemes de Ferrure.

F.—The observation of some pathological facts furnishes us a sure proof that the velvety tissue of the anterior region cannot be submitted to the slightest pressure from the bone or the sole without the immediate manifestation of a severe lameness. (*a.*) When a horse accidentally loses his shoe the lameness becomes visible only when the sole is too thin, either from the cutting by the blacksmith or from wearing, and that then it gives way to the pressure from the ground. (*b.*) The want of hollowness (ajusture) of the shoe does not produce lameness unless when the shoe is too thin or that the sole, thinned too much, gives way to the pressure. (*c.*) In the case of acute laminitis the lameness is most certainly in great part, the effect of the compression of the velvety tissue by the os pedis, which, pushed by the hypertrophied laminated tissue, executes a motion backwards and downwards by its anterior border.

So far we have reached conclusions as to the fixity of the os pedis by deduction; let us now do it by induction. To verify experimentally, if the pressure upon the velvety tissue by the os pedis was painful, we have made upon the anterior foot of a glandered horse a solution of continuity on a level with the superior face of the sole, involving the wall almost in its entire thickness, leaving, however, a thin layer of horn over the living tissues beneath, thus avoiding any local pain and, therefore, any false interpretation of the results of the experiment. After this operation a severe lameness showed itself; the resting upon the leg was done only after much hesitation and as much as possible on the posterior parts of the foot, as in acute laminitis.

To resume, for us, as for M.M. Lafosse, Goyau, etc., the os pedis is immovable in the horny box, it is suspended to the wall, to which, exclusively, it transmits integrally and without a real movement downward, the pressure that it receives.

The closing of the edges of a toe crack at the moment of rest, due "to the traction of the os pedis inside of the arch represented at the toe by the wall" (L. Lafosse) proves to us, however, that though deprived of elasticity, the tissues which unite the os pedis to the horny box are not entirely inextensible, and that there must exist a motion of the bone downwards. But, as said M. Lafosse,

this motion is more "virtual than real," it is specially insufficient to produce sensible pressure upon the superior face of the sole, produce its lowering, the spreading of its branches and the dilatation of the heels, as admitted by Bracy Clark and his followers.

(*To be continued.*)

ACUTE INDIGESTION,

OR FLATULENT COLIC, ENTEROTOMY, ETC.

Read before the Rochester Veterinary Medical Association.

BY E. MINK, V.S., ROCHESTER, N. Y.

Two forms of acute indigestion are quite prevalent in horses. The one in which the stomach is surcharged with food, unaccompanied by tympanitic distension, and causing cerebral symptoms, either in the form of delirium, stupor or paralysis. The other is attended with tympany or flatulency, in some cases slight, in others to such a degree as to cause by its pressure, difficult respiration, rupture of stomach or diaphragm or death from suffocation.

It is the latter form of indigestion that I intend to discourse on in this paper. I will say to begin with, that there is probably no ailment of the horse that is the subject of more empiricism and quackery, both within and outside the profession, than that of flatulent colic. The variety of remedies that have been used for its relief or cure, is simply astonishing, and many of them ridiculous, yet they have all in turn given satisfaction, from hen's-dung, chicken guts, chalk and vinegar, on up to the scientific remedies of the professional veterinarian.

At this point I am reminded of the sayings of Dr. Forbes in his work on Nature and Art in the Cure of Disease.

"Whenever many remedies are recommended for one disease, there is presumptive evidence that none of them are of much value. If any one of them could be relied upon, the others would soon cease to be used and fall into disrepute. So it is with the medical theories upon which the medical art is founded. If the symptoms observed in any disease are explained on many different hypotheses, we have presumptive evidence that its true nature is not thoroughly understood."

I think it a safe estimate that ninety-five out of every one hundred cases of flatulent colic would recover without any medical treatment whatever, provided the patient is afforded room, rest, bedding, pure air and the attendance of good grooms or nurses to prevent injuries.

The other five,being appalling cases, would imperatively require the attendance of a qualified veterinarian to prevent, if possible, fatal results.

However, as it is difficult to prognose in the outset of any given case, how serious an aspect it may assume, or what the result will be, a qualified veterinarian should be called in attendance in every case, when such services can be obtained. The veterinarian should be present for the following purposes: First, To see that the patient is placed under favorable conditions in regard to stabling, bedding, pure air, clothing, watchful attendants, etc. Secondly, to administer such remedies as have a tendency to assist nature in her efforts to remove the difficulty; and, thirdly, when nature and the ordinary medical remedies, prove unequal to the contest, to summon to the front the bold hand of the surgeon, to attack and liberate with the trocar the imprisoned and confined gases, so that they will no longer threaten rupture or suffocation by their pressure, or poison the blood by being absorbed.

With regard to medical remedies, nearly every practitioner has his favorite. Yet, we advise that any and all of them should be used with scrupulous care and judgment, lest with too free use of even a good remedy, injury instead of good is wrought.

Before offering any suggestions in regard to medical treatment on this subject, it will be proper for me to consider, first, the questions that naturally present themselves. What are the causes and pathological conditions existing in this disease? To the first of these questions I will answer, that horses predisposed to flatulent colic are often observed to have capacious bellies, voracious appetites, are hasty eaters and often devour, with apparent relish, filthy straw that has served for bedding, etc. In cases of this kind we have an illustration of both constitutional idiocyncrasy and faulty structural organization combining to produce the disease.

In such animals, the ordinary exciting causes, such as cold water, exposure, fatigue, irritating food, or food rich in starch, will frequently produce an attack of flatulent colic.

To the second question, as to the real pathological condition existing in this disease, I can only answer, the functions of the stomach are deranged or partly suspended. As a result of this the food contained within the stomach soon undergoes a process of fermentation and putrefaction, instead of digestion; gases are freely eliminated, and hence the bloated and tympanitic condition of the stomach and bowels. The great danger in these cases, as before mentioned, is that if the evolution of gases is not arrested, rupture of the stomach or diaphragm will take place, or else death by asphyxia, owing to the immense pressure on the diaphragm and lungs.

The primary causes of suspended digestion are perhaps not fully understood. Chemists and physiologists assure us that the putrefaction or fermentation of the nitrogenized constituents of food, makes itself known at all times and under all circumstances by the disengagement of ammonia having an alkaline reaction; and that the fermentation of the non-nitrogenized substances is always attended by the formation and liberation of carbonic, acetic or lactic acid. It follows then that the mixed foods, when fermenting, must always neutralize each others' products, unless one of them is in excess. It is known that whenever starch is converted into sugar, with moisture and a free supply of oxygen, heat and carbonic acid are freely evolved. And as the supply of oxygen is more or less limited, we only get fermentation when animals are allowed to drink freely of water, while the stomach is more or less filled with food rich in starch or sugar. In this connection it should be borne in mind, that water holds in solution the required element, viz, oxygen. We are aware, of course, that when the functions of the stomach, or rather of digestion, are fully performed, nature admirably provides for checking or holding in subjection these simple chemical actions, so that no gases are liberated.

Now, as I ventured an opinion in the outset that ninety-five out of every one hundred cases would recover if left to them-

selves, I will, in order to guard against misapprehension, state that I am in favor of judicious medical treatment in at least all severe cases.

If the conditions that exist in flatulent colic were known to the owners of animals afflicted with it, and if they were further aware of the knowledge that is required to apply proper remedies to meet these conditions, they would pause and deliberate well before calling to their aid a practitioner of doubtful competency; and further, they would peremptorily refuse the services of the ignorant and illiterate in the treatment of it.

When called upon to treat a case, consideration should be given to the deranged functions, and to the chemical changes that are taking, or have taken, place in the constituents of the food, and apply remedies, if possible, to meet these conditions, and thus assist Nature in her efforts to remove the deranged, and restore the normal, functions of the digestive organs.

At this point we will venture to suggest the medical treatment we deem proper in such cases.

We first ascertain, if possible, the history of the case, particularly in reference to the kind of food the subject has received, so as to decide whether the nitrogenized or starchy constituents are in excess; also, to ascertain whether a short time previous to the illness a free supply of water had been given. Should we find that food had been given in which the starchy constituents were in excess, and that water had also been freely allowed, and the attack recent, we would conclude the gas eliminated to be principally carbonic acid gas.

We would then decide whether we would administer an antiseptic, such as the sulphites of soda, with a view of arresting the fermentation, or whether we would give an alkali, for the purpose of neutralizing a free acid or condensing carbonic acid by effecting a combination with the alkali. With either of the above we would combine three to five drachms of aloes and a half drachm of fluid extract of nux vomica for the purpose of increasing functional activity of the stomach and bowels.

At this point I wish to put in an objection against the use of the carbonated alkalies in all cases where it is probable

that the bloated condition is caused principally by carbonic acid gas. The carbonated alkalies are already saturated with carbonic acid; hence they cannot combine with any more in the stomach. On the other hand, if they come in contact with a free acid, the carbonic acid of the alkali is liberated (in the form of gas, of course), and thus the gaseous distension is increased. The same objection cannot be made to the uncombined alkalies, such as aqua ammonia, spirits and aromatic spirits of ammonia. We are aware, of course, that the aromatic spirits of ammonia may be so prepared as to contain carbonic acid, or, in other words, is a mere carbonate of ammonia in solution. When so prepared we do not consider it as good a preparation for flatulency as the preparation made according to the "Ed. Phar.," which is a mere solution of certain volatile oils in the caustic simple spirit of the Edinburgh College.

Should the history of a case make it probable that the nitrogenized constituents of food are in excess, then a somewhat different course of treatment is indicated.

Here the probability is that the eliminated gases are of the nature of sulphuretted or carburetted hydrogen. In cases of this kind antiseptics are proper to arrest putrefaction as they are in the other to arrest fermentation. The sulphites of soda are probably the best antiseptics.

In our own practice we have for some time given preference to the following combination in cases where we suspect gases of the nature of sulphuretted hydrogen: Aloes, three to five drachms; fluid extract of nux vomica, thirty minims; potassium chlorate, two to three drachms, made into a ball. The aloes and nux vomica are given for the purposes before mentioned, and the pot. chlorate for its supposed power of neutralizing and condensing the gases. The aloes and nux vomica I am reluctant to omit in any form of flatulent colic, as we frequently have more or less obstruction to the free passage of gases through the alimentary canal in the form of accumulated feces in the colon, which in many instances aggravates the pain and spasm and retards recovery—a condition which the aloes and nux vomica materially assist in overcoming, thus gaining free passage for flatu

These remedies have for a long time been attended with satisfactory results in our own practice.

But now supposing all the ordinary medical remedies have failed to afford relief, and rupture of the stomach or diaphragm seems inevitable, and death is fast approaching, then what is to be done ? It is usually urged that enterotomy shoud be practiced as a last resort. But we question the propriety of delay when the tympanitic distension is distressingly great, or of appalling magnitude. Ruptures could often be prevented by timely resort to the trocar, but it can be of no use after they have occurred.

What are the symptoms which make it imperative that the trocar should be brought into requisition ?

The following symptoms certainly indicate that a resort to it should no longer be delayed: Abdomen enormously tympanitic; respiration difficult, say of a shallow, convulsive and catching character; ears and limbs cold; body bedewed with a cold and clammy moisture; much superficial venous congestion; ears lopped; lips pendulous; unsteady and tottering gait. These symptoms are appalling enough to indicate that it is already too late to be of any use. But at this critical juncture it can do no harm, if it does no good, and the owner will certainly not object, nor will he be likely to censure the operation if it proves unavailing.

During a practice of twenty-one years we have resorted to enterotomy in at least thirteen cases of flatulent colic, with the following results,

Case 1. In the fall of 1859 a brown gelding was brought to us for treatment. His symptoms were distressing to witness; abdomen enormously tympanitic, breathing extremely difficult, continual efforts at eructation, manifested by the sound of the gases within the œsophagus, much pain. Medical remedies of good repute were administered, but gave no relief; rupture or suffocation seemed inevitable, unless escape for the confined gases was provided. We punctured the intestines through the right iliac region at its most tense and resonant point. The relief was immediate, and the recovery complete in a few days.

Case 2. In the autumn of 1860 we were called to attend a powerfully built bay horse, with severe symptoms of wind colic.

We administered our favorite remedies with no apparent success; rupture or immediate death seemed inevitable. We punctured, as in case one, with the same attendant relief. Lamnitic congestion supervened before the next day, but yielded kindly within one week, and the patient soon thereafter was put to work.

Case 3. In April, 1863, was called to attend a bay gelding who had been enormously bloated for four or five hours, for which he had been treated without benefit. Symptoms urgent. We punctured the intestines through right side, as in case two. He experienced great relief, but made a tardy recovery. He appeared dull and dispirited for several days. Feces passed had a pale and pasty appearance, and emitted an offensive odor, but he ultimately made complete recovery.

Case 4. Was called in October, 1865, to attend a roan mare that was bloated to appalling dimensions. We immediately punctured; as before mentioned, all urgent symptoms were at once relieved. Her recovery was tardy. Limbs became œdemateous, seemed dull, and appetite poor for ten or fifteen days, but finally came out with restored health.

Case 5. In October, 1865, was called to treat a canal boatman's horse. He had been given medicines that were quite well adapted to his case, without benefit. He was apparently struggling with impending death. We punctured through the right iliac region, which gave immediate relief. Do not know how it finally resulted, as he was immediately taken away on the boat.

Case 6. In September, 1869, was called to attend a valuable bay gelding used as a coach horse. We found him fearfully bloated and suffering great pain. We administered ether, tincture ginger, and sulphate of soda. At the end of an hour, no relief having been obtained, the drench was repeated. Another hour was passed, during which time he grew worse. A ball of aloes, nux vomica and chlorate of potash was now given. In half an hour more we concluded medicine useless in his case. It seemed as if the King of Terrors was about to achieve a complete victory. We resolved to make another effort to defeat him. We punctured through the right iliac region, as in the other cases, with complete satisfaction as to the effect. From this time forth

he seemed to be in a fair way to recovery, until the second day when symptoms of peritonitis supervened. He continued quite uneasy from pain and spasm for about two days. During this time he was treated with opium sufficient to repress pain. Food, in the solid form, was withheld. Gruel and mucilagenous drinks were freely given. He was fully convalescent in twelve days after he was punctured. He soon thereafter appeared in full vigor, evincing his usual high and proud spirit, and was in a few years afterwards sold for a high price, bringing his owner, it was said, $2,500.

Case 7. In June, 1871, was called to attend a medium-sized black mare. Tympanitic distension was great, medical treatment was given but afforded no relief. We punctured through right flank with satisfactory results. Her respiration continued unnatural and laborious for a day or two, but she was soon thereafter restored to health.

Case 8. A large bay gelding was brought to my infirmary on Spring street, in November, 1872, with severe symptoms of flatulent colic. He had eaten largely of apples during the day. Medical treatment was given him. He came in at 8 o'clock in the evening, and suffered great pain from that time until 2 o'clock in the morning, when it seemed as if he was bound by inevitable law to an unseen land, unless some unusual remedy came to his immediate relief. We punctured the right flank, which afforded the desired effect. Bloat and pain both disappeared at once. The patient was put to work within five days.

Case 9. In October, 1873, a gray gelding used as a team horse. Symptoms distressing. Was tapped and relieved. Was dull for several days after. Oblique abdominal muscles contracted and hard. Seemed loth to move freely, but recovered completely within two weeks.

Case 10. In October, 1873, a black mare was brought to my stables on Spring street. Symptoms of a violent character; was gasping for breath, and seemed as if about to expire. We immediately punctured the intestines as in the other cases, with the same result. An abcess formed in the punctured region, but terminated favorably. Recovery was complete within two weeks.

Case 11. A good-sized, coarse, open built brown mare was brought to my stables for treatment. Abdomen enormously tympanitic. Was dull and stupid; manifested no great pain; respiration much embarrassed. Medical treatment gave no relief. Punctured through right flank with a trocar as in other cases—no gas escaped. Concluded colon contained a large quantity of feces. Soon after we punctured the left side through the point most prominent and affording most resonant sound—no relief—died. Post mortem: A black and tarry-like condition of the blood; stomach full of ingesta; colon contained an immense quantity of feces. No other abnormal condition observed. The query arose with us was, whether death had not been caused by absorption of the gases, thus poisoning the blood, or whether the black condition of the blood was merely the result of imperfect æration caused by direct pressure upon the lungs.

Case 12. Was a gray gelding that had been driven to a hack many miles during the day, and when five miles away from home showed symptoms of flatulent colic. Although very unwilling to travel, he was urged on to his home. We were called to attend him about 9 o'clock in the evening. His symptoms were then very violent. Gave him medical treatment without relief. We feared immediate death or rupture. We therefore punctured the right flank, which afforded perfect relief from all urgent symptoms, with the exception of loss of appetite, and dull and stupid condition. Milk, gruel and whiskey were given him, but he gradually sank and died five days after. Post mortem revealed nothing abnormal save a black condition of the blood as noticed in Case 11. A little traumatic gangrene in the punctured region, but nothing of the kind was observed about the point where the trocar had penetrated the bowel. We are of the opinion that it was a case of blood poisoning from absorption of the poisonous gases.

Case 13. Was a medium sized, powerful gray mare, an excellent roadster, used to a butcher's wagon to collect stock. Had been driven many miles during the forenoon, was fed a full feed of oats at noon, and immediately started towards home, a distance of seven miles. Her driver observed nothing particularly amiss,

excepting profuse sweating, until he arrived home, when she all at once exhibited most alarming symptoms. We were sent for immediately. On our arrival the owner thought she would *burst open* before we could give her any medicine. We immediately gave a sub-cutaneous injection of atropine and strychnine in combination in the following quantities: Atropine sulphate, $\frac{1}{12}$ of a grain, and strychnine citrate, $\frac{1}{4}$ grain, and watched for an opportunity to keep her up and quiet long enough to puncture with trocar. We soon attained the desired position, and accordingly sent a trocar into the bowel through the right iliac region. There was a free escape of gas, and great relief. Very soon after we noticed symptoms that caused us to suspect rupture of the diaphragm had taken place. Tremors would occasionally flit over her, respiration was embarrassed, pulse small, hard and frequent; once or twice she was seized with what seemed to me spasms of the glottis, that threatened immediate death. But having once survived the immediate shock of the rupture, she lived for two days after and then died. Post mortem revealed ruptured diaphragm.

EDITORIAL.

VETERINARY SANITARY BUREAU.

If our readers will refer to the January issue, first volume of the Review, they will there find able articles from Professors Law and MacEachran on the importance of establishing veterinary sanitary regulations over the entire American continent, and, as well, the necessity for calling the attention of our General Government to the almost entire absence of laws relating to contagious diseases of animals.

We have, by several articles published in these columns at various times, endeavored to impress upon our Commissioner of Agriculture the danger besetting that branch of our commerce represented in the exportation of live stock, and the great impairment of wealth to which we are constantly exposed by the losses sustained among our domestic animals for want of proper regulations in veterinary sanitary matters.

We have endeavored to point out the benefits accruing to all those countries which, by the adoption of such regulations, efficiently protect their live stock; but it seems that as yet our efforts have borne no fruit.

What, then, is the position in which we now find ourselves placed? The English Government, under the "Contagious Diseases (Animals) Act," asks of our Secretary of State "What laws have been adopted by your General Government to prevent the spreading of contagious diseases, when they exist in any part of the United States?" the object of the inquiry being to satisfy herself that we are entitled to the privileges offered all countries in which Veterinary Sanitary Departments are well organized.

Evidently our answer cannot be satisfactory, and it is a disgrace to our Government that this great nation, with its immense wealth of horses, cattle, sheep, and swine, can show nothing relating to sanitary measures, except a few unimportant regulations, adopted separately by some of the States.

Of course this action taken by the various local governments is commendable; but it is not sufficient, for it supplies us with no safeguards beyond the confines of the States in which these regulations are adopted, and because no *adequate regulations* exist in *any* State.

The time has come when the entire country should see the dangers ahead, and our stock-breeders fully appreciate the immense losses, which must sooner or later overtake them, if our laws remain as they are.

True, our agricultural papers, especially those published in breeding districts, have taken the subject in hand, and seem to appreciate our deficiencies and the requirements necessary to remedy them, so that we may perhaps be justified in looking shortly for some action in the matter upon the part of our Commissioner of Agriculture.

Other governments in the past have remained in apparent happy ignorance of the same dangers which now surround us, until awakened to action by animal plagues which destroyed millions of dollars worth of property, and ruined hundreds of their best breeders. It had seemed that the same fate awaited us until this

inquiry, made by the English Government, gave us hope that the American people would now see the importance of veterinary science, and the benefits to be derived from the veterinarian's knowledge of the contagious diseases of animals.

Our medical papers have lately contained much in relation to the establishment of a General Sanitary Health Board in Washington. Plans have been suggested, boards of officers indicated, their salaries specified, etc., etc. One of our exchanges proposes that the Board be "constituted of one medical officer from the Army, Navy, and Marine Hospital services of the United States, and of three eminent physicians from civil life, a sanitary engineer, and a meteorologist or scientist, each and all to be selected for their special knowledge of hygiene and professional eminence."

Now, all this is undoubtedly very well so far as it goes, and indicates upon the part of our physicians and sanitarians an interest in the matter, for which they deserve great credit; but could a Board so constituted answer efficiently all the requirements of the case? and would it satisfy the English Government that a sufficient protection of her interests was thereby guaranteed? We think not.

The health of our nation cannot be properly protected by sanitary physicians, engineers, and meteorologists alone, for many of the most destructive diseases known depend upon, or originate in, the lower animals, and it is to those scientists versed in their causes, treatment, and *prevention* to whom we are to look for protection.

For this reason we would ask that to the National Board of Health be added a veterinary sanitarian, and also that a Veterinary Sanitary Bureau be formed in Washington, to which all State Boards should report.

The proposition to form State Boards is in no wise a new one, for it has been repeatedly urged by veterinarians in all parts of our country, and it is only by their aid in reporting to the National Board all local diseases and important sanitary deficiencies that a proper protection of our live stock interests can be secured and our status as exporters of cattle maintained in the markets of the world.

THE CATTLE TRADE STOPPAGE BILL.

By Dr. N. H. Paaren, Chicago, Ill.

From the Prairie Farmer.

The losses sustained by contagious diseases of domestic animals, communicated from country to country, in the lines of communication established by trade, have been severely felt in Europe. It has been greatly due to a want of accurate statistics that no measures have been suggested to, or, at all events, adopted by the several governments for their individual and mutual benefit; and that Europe is now suffering, to a very considerable extent, from the system by which one people attempts to save itself from loss by disposing of diseased and infected stock to another. According to British agricultural journals, the admission of disease with live stock has more than neutralized the benefit of free trade in the department of food, and meat would now be less dear than it actually is if importation of foreign stock had been precluded entirely. It is certain that contagious diseases exist so largely in England that, unless further restrictions are applied to the movements of home stock, no restrictions on foreign trade can give the least hope of the eradication of these diseases, which is the necessary condition of any adequate development of the home supply. It is asserted that port inspection has proved unreliable, and that slaughter at the port of debarkation—even with the exercise of all possible care and vigilance—will not confer absolute safety; and the conclusion has been reached that the largest measure of safety was to be found in limiting the food supply from foreign sources to that of dead meat—the animals to be slaughtered and their carcases dressed at the place of embarkation. Not only would this reduce the danger of receiving contagious diseases to the lowest degree, but it would also be most profitable to the exporter, better in some respects for the consumer of such flesh, and also prove far more humane to the animals themselves, as they would then be spared much fatigue, if not positive cruelty in transit. There can be no danger that such legislative action would interfere with free trade. Free trade was never intended to give any one a prescriptive right to deal in that which is prejudicial to the community. There is no analogy between damaged corn and damaged cattle. The one, if sent from here to England, can never affect the sound cereals of the British farmer; the other may work havoc among his healthy stock. Free trade in live stock has been an experiment which has injured every country that has tried it, unless regulated by laws based on a thorough knowledge of the nature of contagious diseases. A nation cannot lose faster by anything than by contagious diseases among live stock.

Realizing the fact that the British nation has sustained severe damage and loss from an extensive importation of diseased animals from other countries, and fully alive to the necessity of preventing infectious importations of live stock, the British government, in conformity with recent enactments of parliament, now notifies the governments of both Europe and the United States of America, that it will no longer tolerate such traffic, and that all animals landed from abroad in

any part of the United Kingdom will, after the first of January next, be slaughtered at the port of debarkation. The British government has especially notified the United States government that, in case the latter desires to be exempted from the operations of "The Contagious Diseases (animals) Act, 1878," the lords will require a statement of the laws which regulate the importation of animals into this country, and the method adopted to prevent the spreading of any contagious disease, when it exists in any part of the United States.

The reply which the United States government can give to this official notification by Great Britain, even if couched in the most approved style of diplomatic lore, and accompanied with ever so many expressions of distinguished consideration, must certainly be one of a most humiliating nature. On its face it will certainly bear its own condemnation; and unless the reply contains the most sincere promise to speedily inaugurate stringent measures to prevent the spreading of contagious diseases in the United States, and this promise be carried out immediately, there can only be one solution of the problem, and that is, that after the 1st of January next, the exportation of live stock from this country to Great Britain must cease. It is, however, not likely that the people of this country will submit quietly to this state of affairs. The great cattle-producing states will undoubtedly bring such a pressure to bear upon the government as to wake it up from its hitherto assumed indifference and most reprehensible lethargy. If the members of Congress, who are now sojourning among their constituents, cannot be made to understand their plain duty in this matter, let the state board of agriculture of each state, memorialize the state legislatures, with a view of having such action taken that Congress be appealed to direct by these legislative bodies.

The United States cannot plead that there are no contagious diseases existing at present in this country; for we have among our cattle in the eastern and middle states one of the very diseases which England dreads the most, (although perhaps not in so malignant a form as abroad), and from the ravages of which that country has sustained losses, representing nearly 100,000,000 pounds sterling, and which to-day still holds sway among its herds of cattle—namely the contagious pleuro-pneumonia. To give an idea of the enormous losses from diseases to which all classes of domestic animals are subject we will mention that, according to a tabular statement compiled from information received from 1,100 counties, the annual losses in the United States, among all classes of domestic animals from various diseases, represents nearly $17,000,000. As this statement is based on the returns from only half the country, it is suggested that the animal loss from this cause may be placed at $30,000,000.

During a number of years, the so-called hog cholera has caused a loss of over $10,000,000 yearly. After many futile attempts to impress upon the government the necessity for investigating the nature and causes of this disease with a view of eradicating it, a paltry appropriation was at last made by Congress. A commission has been appointed to investigate that disease. The manner in which the investigation is directed by the powers that be, is notoriously ridiculed by the agricultural press of the whole country, and no results of practical value are expected to ever accrue therefrom to anybody. As evidence of the care with which the members comprising this so-called hog cholera commission was selected, may be mentioned the fact that one Dr. Alfred Dunlap, of Iowa City, Iowa, is

the proprietor of an extensively advertised "specific" for the cure of this disease. Although the United States commissioner of agriculture was made aware of this mistake, soon after that appointment was made, and also with the alleged fact that this doctor, in connection with the advertisement of his nostrum, announced the fact of his official recognition, in such terms as would lead one to infer that his appointment was an endorsement of his specific,—nevertheless has the commissioner of agriculture seen fit to retain this man. The making, vending and using of a secret remedy or "specific" compound, for the cure of disease, is very reprehensible and unprofessional; but when such practice is both sanctioned and rewarded by the government of the United States, with what feelings of confidence can we expect other nations to regard our efforts for the elimination of contagious diseases among our domestic animals?

In all of the European countries, sanitary measures are prescribed by legislation, to prevent the spread of contagious maladies, and the means of carrying these measures into execution are very stringent. By a satisfactory system of inspection, epizootic and contagious diseases cannot exist long without due attention being paid to them, and measures, often adequate to check the disease, being adopted. How different with us! We do nothing to prevent the spreading of disease, or to exterminate disease, but eat all our diseased cattle. Instead of qualified veterinarians being employed to check the progress of maladies, the butcher's services are in requisition, or the animals are hurried off to the stock yards or slaughter houses of our larger cities. The traffic in diseased swine is on a larger scale than most people would believe. Hardly a day passes but numbers of such animals arrive at the stock yards in Chicago, especially by early morning trains. The obvious reason of this state of things is, that wherever there is dangerous disease among stock, the owner's commercial instinct will be to make whatever salvage he can. The state of our meat trade is a disgrace to any civilized country. Into every large city, diseased cattle, sheep and swine, and diseased meat, are constantly taken without fear of detection.

In the "Revised Statutes of the United States" we fail to find any reference whatever to legislation for the prevention of the spread of infectious and contagious diseases amongst our domestic animals. The few acts that have been passed by some of the states are totally inadequate for the purposes for which they were passed, and most defective also in their operation regarding the prevention of the sale of diseased animals for consumption as food. In the various European states ample provisions are made for the enforcement of the existing laws by the appointment of veterinary sanitary officers, who are in direct and constant communication with the authorities. Our state legislatures have failed to provide for such officers, and from want of proper information as to the real nature and extent of disease existing in the country, the state governments remain ignorant of what it was necessary should be done, in order to check its progress. To stop the traffic in diseased animals we must prevent disease. But we cannot accomplish the latter object without a proper system of enlightened supervision. It must have struck any one who has paid attention to the occasional complaints as to the traffic in diseased animals and diseased meat, that there has been no one in this country to interfere for the public good. It is a well known fact that everybody's duty is nobody's duty, and the public interest never suffers so much as

when important concerns are left in the hands of irresponsible people. To frame an act and not to devise the means to enforce that act would be no legislation at all.

One reason why the United States have failed to take something like effective precautions against preventable diseases among live stock, which have robbed the country of millions upon millions of dollars, and proved so injurious to a great portion of our live stock interests, is the neglect of veterinary science in this country, and consequently the backwardness of that science. The spread of diseases among live stock in the United States is also facilitated by the totally unchecked trade in diseased animals, and by the absence of all proper means to detect and counteract disease. During the prevalence of the yellow fever, vigorous efforts were made, and even quarantine enforced for the prevention of its spread; but the dissemination of diseases among our live stock is not interfered with; the country is wealthy enough not to be destroyed by it, the loss is tolerated, and no attention paid to the consequences. The requirement of the age is enlightened action, but the course with us has been, and is, an apathy and resignation to fate, only pardonable because the result of ignorance. American talent and enterprise should be turned to good account, and not be obstructed by red-tapeism and want of confidence in the powers of science. The only condition necessary to insure the result is good generalship. The United States stand alone among civilized nations for the very little solicitude which the government bestows on the health of our domestic quadrupeds. Practical efforts are only made when too late, or they are so ill-directed as to fall short of the good they might accomplish. A proper system of collecting statistics of deaths amongst live stock is a necessity. The public good demands the adoption of means for obtaining a useful and timely knowledge of the prevalence of disease amongst both man and animals. To attend to the first and ignore the last affords evidence of a partial view regarding the origin and spread of disease in general, which our most enlightened sanitary reformers and physicians will at once admit as not in accordance with the broad and philosophical appreciation of facts needed for the full development of sanitary science. That it is reckless and ruinous to permit disease to spread without the least attempt to check it, must be even more generally acknowledged. The necessary object in this, as in all reforms, must be to benefit the public at large with the least possible inconvenience and deviation from established practices, consistent with the attainment of the desired ends. There is now some prospect that the national government will be obliged to pay attention to legislation for the prevention of contagious diseases amongst domestic animals. But we are decidedly of opinion that, unless a general and effective system of inspection be introduced, the legislative enactments will be little more than dead letters. The most effectual mode of preventing the spread of diseases among domestic animals would be to appoint eminent experienced veterinarians as inspectors over sections of country, one for each state, with authority to act under the provisions of law, and also in all matters relating to diseased animals and diseased meat.

At the meeting of the National Agricultural Congress, in Washington, last winter, a paper was presented by Dr. Paaren, of Chicago, in which the necessity for promoting veterinary science in the United States was sufficiently demonstrated. From the August number of the *Animal World*, which is the journal of

the Royal Society for the Prevention of Cruelty to Animals, we make the following brief extract (from a paper prepared by Mr. Fleming): "In order to increase the property of the nation in animals, as well by securing the best breeds as by multiplication of numbers, and the prevention of disease, veterinary science is indispensable. Contagious and infectious diseases, unless checked, may destroy all our animals, and epidemics may produce an equal calamity if curative forces be not employed. Thus the food of the people, and the labor and pleasure we derive from horses, is jeopardized in a state which neglects to encourage veterinary knowledge and skill. Besides, as many of the diseases of animals are transmissible to human beings, and especially those which are eaten for food, it behooves the people to establish means for effectual protection, their own ignorance and inexperience being an insufficient safeguard. Every government in Europe except our own (the British) has taken veterinary science under its especial care, and has founded schools, several on a large scale, wherein cultivated, eminent men teach students at the public expense, it being accepted in those countries that thus the public advantage is greatly promoted."

Has the government of the United States done anything in the way of aiding or encouraging instruction in the only department of knowledge that can be of service in warding off or curing the diseases of domestic animals? No—absolutely nothing! In this country, indeed, there are few departments of knowledge, however practical, and however directed towards the general behoof, or even however capable of administrating towards the immediate requirements of the national service, which our government feels itself called upon to foster, at any time, with any special liberality. Veterinary science is in its infancy among us, and for the want of a sufficiently numerous membership of the veterinary profession, the country has not been fortunate in gaining a knowledge of its capabilities. As time wears on the need of educated veterinarians will become an urgent necessity, as veterinary science itself has now become an essential of civilization.

The time has thus unexpectedly arrived when the United States government must recognize veterinary science; and it is a somewhat curious incident that our government shall be obliged to step down and do this by the peremptory demand from a government which itself is blamed for the severe losses sustained within its dominions, from the ravages of contagious cattle diseases; and which government moreover was the very last among European governments to recognize the importance of veterinary science.

STATISTICS.

FIRST ANNUAL REPORT OF THE "KÖNIG TECHNISCHEN DEPUTATION FUR DAS VETERINÄRIUESEN"—ROYAL COMMISSION WITH REFERENCE TO THE DISTRIBUTION OF INFECTIOUS ANIMAL DISEASES IN PRUSSIA FROM APRIL 1, 1876, TO MARCH 31, 1877.

BERLIN, WIEGANDT HEMPEL AND PAREY, 1877.

Reviewed by Boelinger in Deutsche Zeitschift, fur Thiermedicin. Vol. 4, *Nos.* 3 *and* 4. *Munchen* 15 *August,* 1878.

From anthrax have died 34 horses, 1,235 rinder, 1,928 sheep, and 403 swine. The greatest number of deaths came in the hottest and again coldest parts of the year. The number of sheep dying from anthrax is in reality much greater, as many cases have come to pass, but not properly notified. Anthrax appeared mostly in sporadic form ; it acquired the greatest extension, and the most deaths appeared in the provinces of Posen, Schlesia, and those of the Rhine. In the district in question the number of deaths from anthrax was strikingly diminished after careful drainage. In consequence of anthrax infection 33 persons were seriously ill, and seven of the same died.

The foot and mouth disease did not attain any considerable extension. It is officially reported as coming to pass by 11,064 cattle, 4,809 sheep, 1,904 swine ; from the same died or were necessarily killed, 46 cattle, 50 sheep, 128 swine. This pest attained the greatest extension in Schlesia and the eastern provinces. The introduction and extension of this pest is due mostly to the herds or droves of swine driven over the country, and to the markets of large cities, and railroad transportation in improperly cleansed wagons.

From *contagious pleuro-pneumonia* (Pleuro-pneumonia erysipelatodes) were reported as diseased 3,121 cattle ; of these 253 died, 2,402 were killed under the veterinary police law, and 462 by

the owners. The reimbursement for those killed per order of the police amounted to 344,808 marks ($86,202). Nothing new has been developed in regard to the value of inoculation.

Glanders (Malleus) acquired a great extension. The number of horses which died or were killed amounted to 2,740, while 3,061 were found diseased. The disease was most prevalent on the eastern borders and in the province of Brandenburg. As redemption for animals killed per order of the police, was paid out 406,480 marks ($101,620). An infection of man from animals is not reported.

By variolæ ovinæ we have a loss of 6,331 sheep, a lethality which was doubtless in reality much exceeded. Peremptory inoculation was recorded in 581, and protection in 321 forms. The pest attained its greatest extension in the provinces of Pommern, Pressia, Brandenburg and Posen; where the protective inoculation of lambs is yearly practised, the same seems to offer no amelioration against the losses from the disease.

Maladie du coit was not observed.

The exanthema of the genital organs of cattle and horses was observed by 53 of the latter and 212 of the former. Scabies was observed by 609 horses, of which 56 were either killed or died. Scabies ovina, by far the most extended infectious animal disease in Prussia, was observed by 94,632 animals, of which 4,080 were either killed or died

Rabies canina acquired no considerable extension. Rabies, or suspicion of the same, came to observation by 521 dogs, 9 horses, 139 cattle, 27 sheep, 24 swine. 119 roaming dogs were killed, and 585 which had been in contact with rabid ones. Eight persons died from the bite of rabid dogs. One veterinarian committed suicide on the first appearance of the symptoms.

Rinderpest was introduced by smuggled animals from Poland toward the end of 1876, and acquired considerable extension. The number of invested localities amounted to 80; the total loss, 910 cattle, of which 62 died and 848 were killed per order of police; 335 sheep and 4 goats were also killed per order of police.

F. S. B.

REPORT WITH REFERENCE TO THE EXTENSION OF INFECTIOUS ANIMALS DISEASED IN PRUSSIA AND SAXONY, FOR THE FIRST QUARTER OF 1878. REFERANT, PROF. MUELLER.

1. MILZBRAND. (ANTHRAX.)

Occurred in Last quarter of 1877.	First Quarter of 1878.
In 114 Districts.	In 99 Districts.
In 194 Towns or Cities.	In 157 Towns or Cities.
In 213 Localities.	In 171 Localities.

The number of infectious centres was accordingly less in the first quarter of 1878.

LETHALLY ENDING CASES.

Fourth quarter of 1877: Horses, 17; cattle, 234; sheep, 113; swine, 33.

First quarter of 1878: Horses, 23; cattle, 200; sheep, 440; swine, 7.

Three dogs are also reported as having died from eating portions of an anthrax-diseased cadaver.

With regard to ætiology, nothing new is to be communicated.

2. APTHÆ EPIZOOTICÆ. (MAUL UND KLAUENSEUCHE.)

The important extension which the pest acquired during the last quarter of 1877, has become somewhat restricted; the disease appeared in

Fourth Quarter of 1877	First Quarter of 1878.
In 166 Districts.	In 139 Districts.
In 601 Towns and Cities.	In 282 Towns and Cities.
In 1391 Localities.	In 396 Localities.

For the Fourth quarter 1877, were diseased, 10,680 cattle; 853 sheep; 375 swine.

For the First quarter 1878, were diseased, 5,686 cattle; 649 sheep; 978 swine.

Died, Fourth quarter 1877, 61 cattle, 72 swine.
" First " 1878, 36 " 18 "

The introduction of the disease was in most cases ascertained, and can be said to have been interposed by means of the traffic in cat-

tle and swine. The large cattle-market of Berlin and Hamburg are looked upon as centres from which the disease has radiated in all directions; railroad wagons also served frequently as localities for infection. In the vicinity of Breslau, numerous outbreaks of the pest came to pass in localities bordering on ways which were passed over by droves of swine driven from Poland. In one case infection came to pass by cattle from swine manure, and in another by straw from a sheep pasture.

A favorable result is said to have been obtained by inoculation in some parts of Saxony.

In Walbreitbock, near Coblenz, a child became sick from consumption of uncooked milk from a cow with this disease.

3. Pleuropneumonia Erysipelatodes.

Fourth quarter 1877.	First quarter 1878.
In 42 Districts.	In 36 Districts.
In 81 Towns or Cities.	In 66 Towns or Cities.
In 108 Localities.	In 72 Localities.

There were in the infested localities—

	Fourth quarter, 1877.	Fourth Quarter, 1878.
	3,377 cattle,	2,819 cattle.
Of these were diseased,	502 "	434 "
" " died	22 "	10 "
" " officially killed	426 "	406 "
" " by owners killed	37 "	58 "

At the end of fourth quarter of 1877, there were 93 localities in which the disease had not been stamped out, and at the end of first quarter 1878, 60.

The decrease in the number of cases of disease and the increased per cent. killed per order of official veterinarians gives hope that it may yet be possible to effectually stamp out this disease.

4. Malleus—("Rotz").

The reports show an important decrease in the number of infected localities, also in the number of diseased animals, and in the number which died or were killed.

Fourth Quarter, 1877. Disease Appeared in	First Quarter, 1878. Disease Appeared in
167 Districts.	129 Districts —Decrease 38
285 Towns and Cities.	256 Towns — " 29
323 Localities.	285 Localities — " 38

NUMBER OF HORSES INFECTED.

Localities	3,479	2,889—Decrease	590
Diseased	721	631— "	90
Died	41	24— "	17
Officially Killed	649	543— "	106
Killed by Owners	53	38— "	15

The reports sent in show that a great number of very suspicous cases were for a long time treated by empirikers, and in some cases by veterinarians, without any notice of the same being handed in to the authorities. Malleus by men is not reported.

5. VARIOLA OVINA.

A great decrease is observable with reference to this pest between the last quarter of '77 and the first of 1878.

Fourth Quarter, 1877.		First Quarter, 1878.	
Districts infected	59	Districts infected	17
Towns "	517	Towns "	18
Localities "	753	Localities "	32

It is evident from the above that during the quarter from January to March, *in which ovination does not take place*, that the disease acquires a very limited extension. The giving up of *protective inoculation* is thus seen to be the first and most important step to the stamping out of this animal scourge.

6. EXANTHEMA OF THE SEXUAL ORGANS OF CATTLE AND HORSES.

This peculiar eruption is reported as having come to observation by 18 horses and 87 cattle. The inoculation period is reported to extend from 3–4, 4–7 days; that is, that the exanthema appeared within such a time from dates of coition. The infection came to pass in most cases from females, and received its further distribution by the thus infected males. Maladie du coit is not reported.

7. RABIES.

Fourth Quarter, 1877.		First Quarter, 1878.	
Districts infected.......	85	Districts infected.......	96
Towns and Cities infected.	142	Towns and Cities infected.	174
Rabid Dogs infected....	114	Rabid Dogs infected....	173
" Horses "	—	" Horses "	1
" Cattle "	31	" Cattle "	13
" Sheep "	—	" Sheep "	—
" Swine "	5	" Swine "	3
Roaming Dogs killed...	34	Roaming Dogs killed...	50
Officially killed........	189	Officially killed........	392

From " Archiv für Wissenschafsliche Thierheilkunde."
Vol. 4—No. 6. Berlin, 1878.

BILLINGS.

Wanted !—Educated Veterinary Inspectors to Protect Ourselves and neighbors from Parasitic Invasion ! Such can only be had by having one National Veterinary Institute !

From *one million seven hundred and twenty-eight thousand five hundred and ninety-five* (1,728,595) swine, *eight hundred* were found infected with *Trichinæ.* THE NUMBER OF CASES BY WHICH TRICHINÆ WERE FOUND IN AMERICAN SIDES AND OTHER SWINE PRODUCTIONS WAS TWO HUNDRED. *It was further confirmed that cysticercus cellulosæ—"Measles," is the most frequent parasite infecting swine flesh.* (Cysticercus cellulosæ, as is or should be known, is the embryo form of Tænia Solium, the most frequent tapeworm by man). The percentage of measled swine was 1—367. Trichinæ were also found by wild swine, the infection of the same is attributed to rats.

From the "Vierteljahrschrift für Gerichtliche Medicine—Berlin—Bd—XXVII, Heft I, 1878."

BILLINGS.

REPORTS OF CASES.

RUPTURE OF PERFORATUS TENDON AND FIBRO-CARTILAGINOUS LIGAMENT AT ITS INSERTION ON THE "OS-CORONA."

By L. T. Bell, D.V.S.

On October 10th, about 19 P.M., a bay gelding nine years old, and about 15.3 hands high, was led into my place of business acutely lame in the near or left forward extremity—the property of Mr. Darling, of Jamaica, Long Island.

History of case, (as related by driver):—The animal had been lame, unable to work, two weeks previous to present lameness, and laid up for rest, which rest had brought about sufficient improvement to warrant him to again resume his work. The horse started with more or less lameness present, and continued to get lamer until within half a mile of my office, when he refused to go any farther, and laid down. On again arising, he was unable to place the foot to the ground, hence he was brought to my place and put up for the night.

I did not see him that night, as I was at that time acutely lame from a sprained ankle. I saw him the following morning. He was suffering acutely, and unable to put the foot to the ground.

I immediately had the shoe removed and the foot examined, but found nothing to account for the lameness; but just above the hoof I discovered swelling, heat, pain, and unusual motion of the bones, but without crepitus. All the motions of the foot, or digital region, were perfect, except that of extension, which was in excess. From the symptoms present, and history of the case, I was satisfied of the presence of navicular arthritis, and diagnosed the present trouble to be fracture of the navicular bone. As I had never seen a case of this nature, and considering it an interesting case, I called in my friend McLean, who first thought it a case of rupture of the suspensory ligament at its insertion; but afterwards rather concurred in my opinion. On the 12th, my friend Holcombe called. I immediately seized the opportu-

nity, and had him make an examination. His diagnosis was fracture of the "os-corona."

Post Mortem :—Animal destroyed; leg examined; found all the bones healthy except the navicular, which was in an advanced state of disease. I then examined the soft parts, and found I had complete separation of the fibro-cartilaginous ligament, together with the perforatus tendon, from the convexity of the pastern and superior extremity of the "os corona," taking away portions of the bone, with the ligaments; and which condition would give rise to all the symptoms presented, and I have the pleasure of presenting it to you to-night in its imperfect condition.

CASE OF LESION OF THE BOWELS.

By William Cutting, V.S.

September 19th, 1878, between four and five o'clock, A.M., I was called to attend a large grey horse, the property of the Messrs. Ellwanger & Barry, of this city. The animal was supposed to be well over night. The foreman saw the beast at nine o'clock the evening before. It had eaten its cut feed, and stood eating its hay as well as any horse in the barn, and was apparently as well as usual. The watchman passes through the barn once an hour during the night, and saw nothing wrong until about 3 o'clock, A.M., when he called the foreman, who at once placed the animal under treatment, administering before I arrived two drenches composed as follows:

℞

Hyp. Sulph. Soda,	ii oz.
Tinc. Opii,	i oz.
Eth. Sulph. "Squibbs,"	i oz.
Ess. Anise,	i oz.
Aqua,	q. s.,

mix, in one dose, and had the animal led round. I arrived about five o'clock, and found the beast still under motion. I ordered the patient into a shed well littered with straw.

Symptoms:—Ears cold; breathing very quick; pulse 120, and weak; eructations of gas from the mouth; not much blote. I judged I had a bad case of stoppage, from some cause.

Treatment:—I at once gave a cathartic ball, six dram strength. The beast, as soon as led into the straw, went down. I then administered two grains of sulph. morphine hypodermically, and rubbed the belly with tin. tereb., which acted well; then gave a warm water enema, which stayed in the rectum the usual time; when it came away, it was about as clear as when pumped in. A little gas escaped, but no fecal matter. At 6 o'clock, I gave two drams of chlo. potas., and first noticed the absence of any pulse. I stayed by the poor beast till 7 o'clock, and gave another enema, which stayed in the body eight or ten minutes and came away clear. The pulse would rally for a short time, but so small and weak I could make no hand at counting it. At last it ceased altogether.

The animal, at no time after my arrival, did any pawing, but would lie down spread out. Sometimes he would lie naturally on his belly, and would suddenly spring to his feet and show the whites of his eyes, as if scared. The membranes of the eyelids and nose, all this time, did not vary from the pale color they bore when I first saw the patient. At 7 o'clock I went home, and got back to the patient soon after 8 o'clock, and found that he had died in less than twenty minutes after my leaving the barn.

The foreman wishing me to open the body, I found the subject lying on the right side, the nostrils and eyelids still pale. I commenced by taking off the near fore-limb, scapula and all, and was surprised to have so small a flow of blood. I next cut the skin from the shoulder, in line with the spine, and about four inches from it. So with the flank; down the flank to near the centre of the belly; then along the centre of the belly to the brisket. I divided the ribs, and lifted the whole side of the carcas so as to bring the whole viscera in view. Scarcely any blood flowed from this cutting. When I penetrated the abdomen, a

small quantity of serum escaped, but not more than I might have expected. When I reached the bowels, I found the seat of the difficulty near the commencement of the colon, at its largest part, for about a foot in length. Complete mortification had ensued, the discoloration becoming gradually less, till it ceased altogether about three feet up the bowels. Traced up to the band connecting the colon together, the congestion was very intense, extending along this band several feet; the blood was bright in color. I cut open the colon at its most intensely diseased part, and found it very rotten, so much so that I could tear it very easily. When I examined the inside of the bowel, I found what I thought was extensive interstitial infiltration. No blood appeared to be mixed with the contents of the bowel. The inside of the bowel was as black as the outside, or more so, and had a rough, or corrugated appearance. The rectum was healthy, no discoloration of it or that portion of the colon connecting with it, excepting a small portion of the small intestine that touched the mortified colon, which was discolored; the remainder of the small intestines were healthy. I took out the rest of the viscera. The liver was sound; I thought it small and compact. The spleen the same. The stomach was sound and full of food, so that nothing, I think, could have left that organ from the time the animal eat its meal in the evening. The lungs showed traces of former diseased action, nothing recent; they looked just as I should expect lungs to look had the animal been bled to death. I am sure they were quite as pale as any lungs I ever saw taken from a beef or porker, that had been properly butchered. At some period of the animal's life pneumonia must have existed on the upper portion of both lungs. Partial adhesion existed on the extreme thin edge of the left lung. A portion of the lung seemed to have been absorbed, and the edges healed.

The heart was large and flabby to the touch. When I cut open the heart there was no blood in either ventricle or auricle. One question with me is, what had become of all the blood? I do not believe there was three gallons in the whole horse, and yet it was a large animal, weighing not less than 1,250 lbs. This animal had

been under my care, I think, on two different occasions for excessive nasal discharges, and was an animal that was very susceptible to catarrhal affection. The teamster who had charge of the horse, an old, careful man, had been sick a week or two, and a younger man had driven the horse in the old man's place. The foreman told me the young man was a careful driver, and the horse had not done any extra work. The work the horse performed the day before his death, was rolling, which the foreman seemed to think was quite light work.

WM. CUTTING.

5 *North Avenue*, *Rochester*.

INCISED WOUND OF THE METACARPUS.

EDITOR REVIEW :—

Having recently had a case which I thought would be interesting to the profession, I have made a few notes which enables me to furnish you with a brief account of a serious injury and its results, and if of sufficient interest you are at liberty to insert it in the REVIEW.

I should have forwarded it ere this but awaited a satisfactory progress of the animal's ability to perform his duty, which he now does with perfect ease. On the morning of the 19th of July last, an aged gelding was brought to my infirmary, bleeding profusely from a wound inflicted by the driver of an ice wagon with his ax, to the outer and posterior part of the off metacarpal bone, whether wilful or accidental—though I suspect the former—has not been proven.

The wound extended from the head of the bone to the bulb of the small metacarpal, and was so deep that I laid two fingers between the bone and the tendons, touching the integument on the inner part of the limb. The horse had then lost about eight quarts of blood, he having travelled nearly four blocks from where the accident occurred to my infirmary, drawing an empty fuel wagon.

I immediately placed a tourniquet over the knee, bringing the

pressure directly on the radial artery, which I could feel pulsate, and administered ʒ ss chloral hydrate in ball to quiet him, as he was very excitable, the day being hot and the flies troublesome. I then carefully cleansed the wound, ligated the metacarpal artery, superiorly, and applied tortion to the veins and some smaller branches. I inserted three twisted metallic sutures (harelip) to close the incision; the first about two inches below the top of the wound and nearly two inches between the others.

I filled the superior space from which the blood oozed with lint dipped in equal parts of tinct. opii and c. tr. benzoin, and bandaged over the whole with five yards of linen, three inches wide, and kept wet with carbolic lotion, 1 to 30. During the course of the operation he bled about two quarts more.

I placed him in a cool stall, the floor covered with tan, so as to prevent jarring the limb, and darkened it to shut out the flies; gave no food nor drink for twenty hours, except to moisten the mouth with cool water occasionally.

I slackened the tourniquet in twenty-four hours, and a slight continuous hemorrhage ensued. I again tightened it and it checked; left it for a day and a half longer, and removed it entirely.

The bandages were removed and replaced three times a day, and kept wet during the day with the carbolic lotion.

After the fourth day the wound commenced to suppurate, and granulation speedily followed and closed the aperture, but being rather exuberant I used a little dry alum and pressure to reduce it; wound up with cold water bandages during the day, removing them at night and applying a little carbolic acid to the cicatrix, 1 to 10.

Fed nothing but bran and water for the first ten days, gradually giving oats and hay, and increasing it to the 17th of August, when he was discharged.

On the 2d of September he was put to slow work for the first time, being 54 days after the occurrence. The temperature of the limb inferior to the injury was much lower than that of the others for several days, and although increased heat was manifested on the day he resumed work, still it was far from being normal.

I omitted to state that for the first fifteen days he was not moved at all, but given walking exercise daily after, until his dismissal. I saw him yesterday and he trots fairly, bending the knee and without lameness, though he has not entire freedom of locomotion. The swelling has not quite disappeared, but it is trifling considering the nature of the injury, and the time. Hoping I have not omitted anything important,

Respectfully yours,

L. V. PLAGEMAN, M.R.C.V.S.

RUPTURES OF THE STOMACH AND OF THE DIAPHRAGM.

BY C. H. STOCKER, D.V.S., SALEM, MASS.

Was called some time since to see a horse suffering from colic. Diagnosis at once, *ruptured stomach.* From a peculiarity in breathing I was led to listen at the chest, and could detect *inspiration* perfectly, but the expiratory murmur was nearly *absent*, from which condition (taking into consideration the more important lesion) I diagnosed also a *ruptured diaphragm.* An autopsy revealed the stomach ruptured through its long extent, the food, etc., having passed into the abdominal cavity. Also, a rupture of the diaphragm some fourteen inches in extent, all but about four or five inches of which was a fresh rupture, while the other I judged to have been in existence some two or three weeks. A history of the case proved it to have been produced some five weeks before, the animal having had more or less constitutional disturbance since that time (fell down hill). Question—Is the diaphragm so important a factor in respiration that its rupture precludes so sudden or full expulsion of air as to render its passage inaudible while listening at the thoracic walls? If so, is not auscultation an adjunct in diagnosis in many cases where we have abdominal disturbance, (often in the same animal) which disturbance may pass away in a few hours only to recur again, and finally a *post mortem* reveals the diaphragmatic lesion which had evidently existed for quite a period, but through which a large amount of intestine may not have passed till the final sickness?

FRACTURED FEMUR.

By the Same

The following case is interesting to me from its history. Was called this week to see a mare that was found down in the morning and unable to rise. Saw the animal laying on near side; tried to get her up, when she appeared to be incapable of using the near leg. We turned her over, and a diagnosis of fractured femur was made, and the animal destroyed. A history of the case revealed that the mare was suddenly taken lame in July, the near leg being near powerless. A doctor (?) was called, who treated her for spavin (no one would dispute she had one). She did not lie down for some weeks, and when she did she thrashed greatly, and was treated for colic. Some three weeks before I saw her, she had been taking exercise, and had recently been driven every day more or less. The day previous to my seeing her she had been eight miles, walking quite well (as it is said), but trotting very lame, with a *peculiar* movement of the leg, and the animal traveling (according to the groom's tale) three-corner wise. A *post mortem* showed an *old fracture* of the femur (transverse) at the upper half, at which, and in the medullary canal, was a large amount of reparative material. Below and above the old fracture were numerous fragments of bone which had been broken off during the night and in the morning, in consequence of the struggle of the mare. I merely write the above to show that we are not in this section of the country above driving a horse having but one femur. Have heard of this case of lameness before, but was never called to see it (till the day of which I write), and learned it had been diagnosed spavin, fractured hip, strain across kidneys, etc. The above lesion settles it.

FRACTURE OF THE ISCHIUM.

By The Same.

While we are on the subject of fracture I will state a case in my province as follows: Was called June 19th, to the State Insane Asylum at Danvers, to see a lame mare. Diagnozed fracture of the ischium just back of acetabulum. The mare was put in slings

and remained six weeks, at which time she was walked across the floor, and walked sound, perfect action in the legs, &c. She was kept in slings another week. At the expiration of that time orders were given to let her stand *out* of the sling in the day time, (head tied up, etc.,) but put back in slings at night; this was on Friday. The following Sunday, it being a half holiday for the stable-boys, they were careless about tying, and as a consequence the animal got her body down, and when the hostlers got back found her struggling. She was raised with a tackle, and I was called the next noon, to give a prognosis. Found a re-fracture, also a fracture at the pubis. As the horse was considered a valuable one, it was decided to give her more time. She was again put in slings and remained three weeks, at the expiration of which time we still had consultations. I was asked if willing to have Dr. Thayer called in consultation, to which I most willingly acceded. The result was that she be kept in slings a fortnight longer, with a doubtful prognosis. At the end of three weeks there was no consultation, but the animal was lamer than before. I ordered her to be "turned out" for a week, as a very large callous had formed, in the belief that possibly by exercise the muscles might in part adapt themselves. At the end of the week, no apparent improvement having taken place, she was destroyed. The specimen reveals a united fracture at the pubis, also a perfectly united fracture at the ischium, the callous so large as to, in a great measure, cover the obturator foramen.

The question arises, would the callous absorb? or if it would absorb only in part, would the muscles adapt themselves to the enlargement? I think not.

CORRESPONDENCE.

REMARKS UPON TWO OR THREE FORMS OF PARASITES NOT ENTIRELY NEW TO THE PROFESSION.

By Justitia.

While there is such an honest endeavor amongst *almost* all the veterinary profession to really elevate their calling in the minds of the people, by conscientious work, it seems a pity that their en-

deavors should be in any way hindered by a few money spinners within their own ranks; but that this is the case is a lamentable fact, and it seems to the writer that their sayings and doings should not go unnoticed in the pages of this journal from any feeling of false delicacy amongst us, but that they should be shown up much as that very able and practical journal, *The Agriculturist*, shows up the various frauds that so hurt the honest nurserymen, agricultural tool makers, etc., besides whittle the farmers out of very much too large a proportion of their earnings. For instance, there is one who writes himself M.R.C.V.S.E., and who occupies a rather prominent position before a certain class of the community, who advertises freely through the medium of the papers, and by circulars through druggists, harness makers, and every conceivable source, that he has and will sell an "incomparable worm specific," the "worms being utterly unable to resist their astonishing efficacy;" he also, to add still further to the mysteriousness of the thing, remarks that their preparation has been a secret amongst his family for the past two hundred years, and that they have been a family of veterinary surgeons for that time; now this last may or may not be true, but if it is how publicly and shamelessly he calls attention to the professional crookedness of his dead ancestors; let us hope that even in our much enduring, but after all noble science there are not many such families of parasites; for any medical man will declare that an honest practitioner will, if he discovers any new combinations of drugs, that has shown him by thorough trial to be better for a certain disease than any other that he has tried or heard of, communicate his discovery to his medical brethren, so that suffering life may have their sufferings alleviated universally by what his experience shows him to be the best and most speedy method. Else why the need of our medical journals, to which the best minds and hardest workers constantly contribute their thoughts and discoveries, that they may be printed, and read by, and profited by, any and all of us? And now to the other side, and probably the true one of this wormy business. The Edinburgh Veterinary College prescribes for worms a certain powder to be followed by a ball the formulæ for which are as well known amongst the profession as is the name

of "old Charlie the groom" to the graduates of Clyde Street; also that the results of this treatment are entirely satisfactory in almost every case. Now this specially gifted worm-destroyer is, he *says*, an M.R.C.V.S.E.—at all events he *did* attend lectures at the Veterinary College, Clyde Street, Edinburgh. This insures his having heard many times of the powder and ball in question and of their universally good results; now, which is the more logical conclusion, that there has been such a private recipe in secret existence for two hundred years in a certain family, or that this young member of the parasitic family has taken the standard powder of the Edinburgh college—in effect—and added to it this very thin narrative for the purpose of better blinding the public, who do not realize that there is as much honor and professional etiquette amongst all right minded veterinarians in this country, "Great Britain and France" as there is amongst the practitioners of human medicine, and that one amongst them who descends to the use of the newspapers for the purposes of self-glorification and the sale of private nostrums—he being a graduate of a school, cheats his school, his profession and the public in general who have anything to do with him. Then there is another M.R.C.V.S.E.—alas poor Clyde St.—that asserts "in the most positive manner" that a certain powder, the preparation of which is also a secret known only to the young parasite before referred to, "has no equal in this or any other country as regards beneficial effects upon the horse's system;" now, if he had only said that he did not *know* of anything that would equal this wonderful powder, no one would have thought of taking him to task for it—we should have all believed it; for, in the days long back, when our "wee mannie" graduated, if report be true, they were none too particular in old Clyde Street as to the amount of *medical* knowledge *acquired*, but if only there had been sufficient time spent in knocking about the forge to please the principal professor, a man was pretty sure to go through; but since then—thank progress!—things are changed for the better, and the "wee mannies" of to-day must all be educated young men, the like of which was almost an unknown thing in the college days of our

ancient friend who asserts and recommends so freely things that from the very secrecy with which they are prepared he knows nothing of. This form of parasitism is not nearly so bad as the last, but still it is not dignified, professional or honorable towards one's profession to recommend so highly some private nostrum, or to say that in this or any other country there is nothing so good; is this poor old cats'-paws-mind the greatest veterinary mind of the age that he thus judges the knowledge of his brethren? How much, Mr. Editor, do you suppose a coincidence something like the following would tend to advance veterinary science, especially in the minds of the farmers? An unfortunate member of that honorable body has a sick cow; he wonders what he will do; he has heard there is such a thing as an educated man who practices rational medicine amongst animals; he having had much to do with the cow leech thinks he will see a veterinary surgeon. One is called in and agrees to see the cow for $5—he comes, he sees, he prescribes? No, most assuredly not; he takes the farmer into a corner and says: "My friend, how much is your cow worth?" "About $55,' answers the man. "Well," says the veterinary, "if she dies you will lose that amount; without me she will, but I can save her; give me $30 and pay me $5 for this visit and I will do it and you will be in $20." Farmer thinks he's in a bad box—consents to the arrangement—events ensue in about the following order: a dose of salts, a relieved cow, a money spinning "vet" happy with thirty stolen dollars in his pocket, a farmer who forever after shuns the aid of the profession and persuades his friends to do likewise Result: more harm done to the profession by this money suckling parasite in thirty-six hours than could be done to it by a good honest quack in a whole lifetime. *Apropos*, rather a queer business card has recently been published. One would certainly think that a man who had received so many honors would be thoroughly versed in the rudiments of medical ethics. Probably the reason he is not is that his honors are *mostly* from the newspapers, solicited probably, judging by the card; but here it is:

———— M. D., Ph. D.

Veterinary Surgeon.

The University of—— has conferred on—— M.D.V.S., of——, the honorary degree of Doctor of Philosophy (Ph. D), in recognition of the valuable services he has rendered the College by his popular lectures over the State, thus elevating the standard of the Veterinary calling among the farmers generally.—RECORD & FARMER.

The reverse side of this wonderfully professional business card is yet even queerer, for it bears the copy of a letter written the advertising professional gentleman away back in October, '72, by a certain Governor, acknowledging the doctor's wonderful skill in veterinary lore, and authorizing him to visit the different parts of the State to render to the farmers his valuable aid and assistance. Now this is all very commendable, and is a matter that any man would be proud of, but why in heaven's name does *so* able a practitioner, one so abundantly qualified to practice in with the human or veterinary branch of the medical profession, descend to the methods of the vilest of quacks? Thus then, Mr. Editor, have I attempted to show what seems to me to be the one great disease that the honorable growth of our profession has to fear—parasitism—the doings of these men who are of us and still not of us, who hold the diplomas of colleges, but still are bastards to their alma mater. The remedy is plain but disagreeable, "*vis unita fortior.*"

INSTRUMENT FOR APPLICATION OF STEAM.

We received some time ago from Dr. T. D. Beer, of Boston, an apparatus which we have tried and found answering all the purposes and advantages claimed for it, amongst which are those of applying hot air upon any part of the body, either locally or as a general bath.

It is specially in the application or use of steam in the treatment of diseases of the respiratory apparatus that the instrument has found in our hands its best results.

The whole apparatus consists of a little boiler holding about one quart of water, and a lamp filled with alcohol, which will evaporate it in about one hour. The steam is carried into a bag of heavy duck, and the inlet so arranged that the steam never strikes the skin directly when in uses.

In any large horse establishment this will prove a very useful instrument.

SPECIMENS

SENT TO THE MUSEUM OF THE AMERICAN VETERINARY COLLEGE.

125	Os pedis showing periostitis and ostitis as consequence of laminitis	A. A. HOLCOMBE, D.V.S.
126	Intestinal calculus	JOHN F. BUDD, V.S.
127	Mulberry calculus	" "
128	Intestinal calculus	TH. OUTERBRIDGE, V.S.
129	" "	" "
130	Prepared hoof of hind foot	" "
131	Bandages for Knuckling Horses	C. H. PEABODY, D.V.S.
132	Ulcer of the pyloric portion of the stomach	TH. OUTERBRIDGE, V.S.
133	Intestinal calculus	" "
134	Pathological shoe	L. MCLEAN, M.R.C.V.S.
135	Laceration of fibro-carthaginous pad of the articulation of the first with second phalanx with fracture of os corona	L. J. BELL, D.V.S.
136	Corrosive preparation of kidney, Horse	REYNDERS & CO.
137	Corrosive preparation of kidney, Sheep	" "

138	Corrosive preparation of kidney, Pig	REYNDERS & Co.
139	Corrosive preparation of kidney, Wolf	" "
140	Corrosive preparation of kidney, Dog	" "
141	Corrosive preparation of kidney, Dog	" "
142	100 days fœtus, Calf	W. ROSE, JR.
143	Amputated penis for paralysis and phymosis	A. LIAUTARD, M.D.V.S.
144	Strongylis Micruris	J. C. CORLIES, D.V.S.

EXCHANGES AND JOURNALS.

HOME EXCHANGES.—Scientific American, Hospital Gazette, Medical Record, Country Gentleman, Turf, Field and Farm, New York Rural, American Agriculturist, Prairie Farmer, Practical Farmer, Scientific Farmer, National Live Stock Journal.

FOREIGN EXCHANGES.—Journal de l' Agriculture, Veterinareuie, Veterinary Journal, Recueil de Medecine Veterinaire, Archives Veterinaires, Mouvement Medical, Clinica Veterinarier, Revue fur Thierheilkunde und Thierzucht, Archiv fur Wissurschaftliche und practische Thierheilkunde, Band IV, 6 Heft; Bulletin de la Société Centrale de Medicine Veterinaire.

NEWSPAPERS.—Western Sportsman, Western Agriculturist, Our Dumb Animals, Vermont Record, Ploughman, New England Farmer, &c., &c.

CATALOGUES.—Annual Announcement of the Medical Department of Vermont Medical College, Tryk's Veeartsenij School te Utrecht.

COMMUNICATIONS RECEIVED.

G. Penniman, J. F. Winchester, F. S. Billings, Robt Wood, T. S. Very, C. H. Stocker, J. Gerth, Jr., J. E. Germinal, Secretary Ontario Veterinary College Association; Opening Ontario Veterinary College.

AMERICAN VETERINARY REVIEW,

JANUARY, 1879.

ORIGINAL ARTICLES.

ATROPHY OF THE PLANTAR CUSHION.

BY G. CHENIER. TRANSLATED BY A. LIAUTARD, M.D., V.S.

(Continued from page 370.)

II.—III.

CAUSES AND DIRECT CONSEQUENCES OF THE ATROPHY OF THE PLANTAR CUSHION.

J'ai toujours remarqué que les maréchaux qui abattent beaucoup les talons, les barres et la fourchette sont ceux entre les mains desquels les chevaux deviennent le plus souvent encastelés.
—L. Lafosse.

I always observed that the horse shoers who pare the heels, the bars and the frog the most, are those in whose hands horses become the most hoof-bound.
—L. Lafosse.

The navicular bone transmits necessarily to the plantar cushion, through the terminal aponeurosis of the perforans, the entire sum of the pressions that it receives. During excessive motions of the extension of the fetlock joint, the os coronæ presses also upon that same organ.

It is consequently upon the fibro-elastic apparatus of the foot that at last is thrown by the navicular and the os coronæ, a por-

tion of the pressure of rest, whose quantity increases or diminishes according to the degree of inclination of the phalangial axis.

On the other side, in a foot well made, which has not been distorted by the shoer, in a virgin foot, the frog and bars come in contact with the ground at each step of rest (this fact is acknowledged by all who have seen feet which have never been shod), and then with the wall assist in the support of the body and like it also, if not more, in the amortizement and diminution of the reactions.

In the physiological condition, the plantar cushion is therefore submitted to opposite pressures, which are necessary to its vitality, as every organ must perform its function to preserve its integrity of size and form.

It is consequently logical to admit that each time this pressure is diminished, attenuated or destroyed, the vitality of the plantar cushion will be diminished in proportion. It is indeed what happens; first—when there is insufficient exercise and specially complete inaction; second—when the frog is pared too much and ceases to rest on the ground; third—when as consequences of pain, an extremity is more or less relieved from resting on the ground.

Now, every diminution in functional activity, carrying with itself an organic atrophy so much more rapid and marked that it is greater and more prolonged, it is also logical to admit that the plantar cushion—which is truly no exception to the common rule of all organs—must fatally undergo a change of atrophy every time that it is exposed to any of the causes above referred to; when for instance the frog is relieved from pressure by excessive paring; again when the animal remains inactive in the stable, because, as M. Bouley says, though he attributes this fact to a different reason, "if the feet support in this case, the pressures which directly correspond to the weight of the body, they are never like those which act during locomotion, which increase with the rapidity of the motion of the body." The plantar cushion must undergo a motion of atrophy more marked yet, where these two causes act simultaneously and when also a leg is totally relieved from pressure at rest during intense lameness.

Observation rigorously proves these hypotheses, specially if applied to the anterior extremities alone. If the hind feet form exception to the rule—and even not always as we will show it further on—it is probably due to the physiological play of both; the former being agents of support, the latter of progression.

By its atrophy, the plantar cushion has for direct results: first—to carry in its motions of shrinkage the corresponding regions of the wall—which must remain perfectly adapted to the size of the parts they enclose—that is to produce the contraction of the posterior regions of the wall; second—to occasion the straightening of the branches of the sole; third—to bring on the atrophy of the frog which forcibly follows that of the pyramidal body. And besides, as the frog diminishes in size, its resting becoming less and less, the effect becomes in its turn an occasional cause.

From the above, we will draw the deduction that the disease called hoof-bound (encastelure), is the necessary consequence of the primordial atrophy of the plantar cushion.

We know that this conclusion is radically opposed to received ideas, and that in expressing it, we are entirely contrary to what is generally admitted, but it is with conviction that we do so after being satisfied that all causes to which the development of hoof-bound has been so far attributed were all hypothetical.

Indeed, upon what basis was it admitted that the contraction of the wall preceded and produced the atrophy of the plantar cushion? Simply upon considerations which, by being repeated over and over again, began at last to appear logical. It is true and possible that certain external influences may not be entirely unconnected with the development of this disease; but if this action is real we will see that their importance has been much exaggerated.

1. Have horses of a meridional breed a peculiar predestination to become hoof-bound?

Peu fondée est l'opinion qui considère l'encastelure comme une conséquence nécessaire et fatale de l'organisation primitive des individus originaires des pays méridionaux. —H. Bouley.

How little founded is the opinion which considers hoof-bound as a necessary and fatal consequence of the primitive organization of individuals bred in southern countries.—H. Bouley.

This observation of M. Bouley seems to us very correct. It is beyond doubt that hoof-bound is more frequently observed amongst horses of meridional origin than in those bred north. It is due, not to their origin, not to a special hereditary constitution, but to the fact that the effects of shoeing to the point of view of the conservation of the form of the foot, are so much more injurious, that this organ is narrower. Let us try to prove it.

In a southern horse, with feet relatively narrow, high heels, thin frog, French shoeing as it is generally practiced, has for result, to screen the frog, more or less, from contact with the ground. In northern breed, on the contrary, with their wide expanded feet, low heels, the frog, even pared to excess, yet rests upon the ground. And let us add that amongst these last horses, many are employed for the work of the farms, and that then the foot, sinking in the soft ground brings pressure to the plantar surface. French shoeing having for effect to remove the natural conditions of the foot, is it surprising that its pathological consequences are more marked in one animal than in the other? No, and it is useless to invocate for this result, the influence of special hereditary constitutions.

This opinion is confirmed by the fact that the virgin foot of the Arab horse, or of the mare of Tarbes is never hoof-bound, and by the other fact that Arab shoeing, deficient as it may be or seem to be, has never for effect given rise to that lesion. It is because the Arab horse-shoe is a bar shoe, and that the frog takes its portion of pressure as in the normal state.

To resume, the frequence of hoof-bound in horses of meridional breeds is not the effect of special predisposition; but the result of external causes.

2. As cause of hoof-bound, the influence of the fixedness of the shoe by the nail has been considered. Is the opinion justified?

Whatever may be the adopted opinion relating to the expansability of the posterior parts of the foot; whether with MM. Bouley, Merche, Rey, Goyau, etc., it is admitted that the foot is elastic, or with MM. Reynal and Lafosse, that it is unchangeable in its form, it does not seem to us possible, to grant to the fixedness of the shoe by the nails, any influence upon the production of hoof-bound.

On what basis does the admission rest? Upon a pretended immobilization of the wall by the nails which secure the shoe. For the nails being an obstacle to the expansion of the regions in which they are implanted, viz, the anterior parts of the wall, these must be expansible. But we know that the os pedis receives no real displacement; it is then impossible to admit that at every step of rest, an expansion of the regions of the wall which adhere to it, would take place, without having a stretching of the laminæ, of the podophyllous and keraphyllous tissues.

Though we were well satisfied of the inexpansibility of the anterior regions of the wall, we have experimentally proved it. To that effect we took a double impression of the contour of the wall in two different conditions. In a first operation the foot, being properly pared, rested upon a board covered with a sheet of white paper, the board being raised a little from the ground, so that the foot supported only the weight of the extremity. In this position the outlines of the inferior border of the wall was taken. The second operation was made with the foot at rest, an assistant on the back of the animal to increase the pressure at rest, and the opposite foot raised. We have repeated these experiments a number of times upon animals four or five years old; and so as to make them more rigorous, we sometimes placed upon the inferior border of the wall a thin metallic plate; and always we have obtained two drawings which corresponded exactly to each other, at least as far as the anterior regions were concerned, those in which the nails are implanted. (In these experiments we took no notice of the posterior regions.)

Therefore the nails which fix the shoe cannot immobilize regions which are already immovable; they cannot prevent the motion of the expansion of the posterior regions, if this motion exists, as this question is yet doubtful. We must even acknowledge that if this one existed, it would be favored by the presence of the shoe—as the motion of laterality would be easier upon a flat and smooth surface, as the shoe, than upon the ground.

It is only in young subjects, when the foot is still developing, that shoeing might produce a stop in the growth of the anterior

regions of the foot. And yet, the formation is only problematic, for, as says Coleman, "the efforts of nature to counterbalance the effects of art are so powerful, that the nails are drawn off by the excentrical motions of the hoof, which widens as it grows down." For us, we have often observed young horses prematurely shod, and we never noticed a manifest stop in the growth of shod feet; after fifteen days of shoeing, the horn projected beyond the external border of the branches of the shoe, sure proof that the implantation of the nails had not interfered in any serious way with the growth of the foot.

If, however, the fixedness of the shoe with the nails was sufficient to produce the contraction of the wall, would not a bar-shoe do it as well and even more than any other? And then throwing aside the hind feet, though in them the nail holes are in many instances close to the heels, would not all anterior shod-feet become hoof-bound in time? Still we meet every day horses shod for ten, fifteen, even twenty years, with excellent feet.

To resume, we will not say, as M. Lafosse did, that in bringing the nail-holes of the shoe as near as possible toward the toe of the front feet, "we favorize the actions of the causes which produce hoof-bound;" but we believe that without fear of error we can state, that when these nail-holes do not go beyond the middle of the quarter of the wall, as is generally the case, their implantation through the wall cannot produce any modification in the form of the foot.

No doubt Bracy Cherk's experiment, so often mentioned, seems to prove different. But it must not be forgotten that his ideas of the physiology of the foot were erroneous, that for him the frog acted as a key-stone, and that his shoeing had for object to relieve it from pressure with the ground. It is not surprising that that mode of shoeing gave rise to alterations in the form of the foot. As practical conclusions we will add that if peculiar shoeing, such as the hinge shoe, the unilateral shoe are injurious, they have no more effect upon the conservation of the form of the foot than the ordinary shoe.

(*To be continued.*)

PLEURO-PNEUMONIA ERYSIPELATODES.

F. S. BILLINGS.

Continued from Page 325.

1. What is the nature of the contagium of this disease?

In a true sense, can we look upon this disease as an inoculable disease, *i. e.* does inoculation produce an artificial disease which renders the inoculated organismus immured against natural infection, and is the course of the artificial disease milder, and does it cause less sacrifice of animal life than the natural?

2. What circumstances exert an unfavorable influence upon the artificial disease, and are we enabled to offer any security against the action of the same?

3. Is the artificial-inoculated disease, if not in the localization, yet in nature, similar to the natural, *i. e.* does it render the organismus in question, immured against further infection from the natural contagion for a period of a variable termination?

4. Is inoculation to be recommended? and when? Does timely inoculation cut short the course of the disease? Does inoculation exert any influence upon a disease already in progress of development, and what influence?

5. Does the artificial disease offer to us any pathognomonic clinical phenomena, which we may look upon with any degree of confidence, so that we can in a grave case, assure ourselves of the sufficient action of the inoculated contagium?

The contagium of pleuro-pneumonia erysipelatodes is, in its nature, fully as unknown as that against other infectio-contagious diseases. We simply know that the same is bound, not only on the gaseous and fluid excrementa of such animals as are the subject of its ravages, but that when surrounding objects become polluted with the same, they *may* become vehicles to its further distribution. Neither chemical or microscopic investigation is capable, however, of demonstrating this fact, so that we can only assume its presence when we can, with a certain degree of safety, assume that the vehicle in question has been in contact with

organisms or their excrement, complicated by the disease in question. The tenacity of this contagium outside of the complicated organism, is very unimportant; within the diseased organism it is so much the greater. Cattle are the only ones among our diseased animals which have any receptivity for this contagium. While the non-transportable contagiums find access to a new organism, as a rule, only by means of actual contact with the dermis, or mucosæ of the nose or digestive tract, the transportable find the atrium, in general, by means of a respiratory surface.

So far as we are enabled to form an opinion on the primary action of the infectious elements in question, it appears as if a nulification of the same first took place at the seat of primary location or in its vicinity, followed by inflammatory processes with great inclination to gangrene. When the elements of infection find their entrance to the organism by the lungs, the processes in question seem to remain limited to the same, while by inoculation, they appear to confine the action to the insulted locality and its circumferences, so that the lungs appear to be entirely exempted from complication, or only disturbed to a very insignificant degree. It is self-evident that it is a question of great importance whether the lungs, or suitable portion of the cutis becomes the disease—atrium. It is as questionable if the infectious elements in question, as well as those of variolæ, find an immediate absorption on inoculation of the same, or if an anticipatory multiplication of the same takes place at the point of inoculation.

Experience can alone determine whether the inoculated disease has a milder course than the natural.

Since the broschure of Dr. Willems, 1852, appeared in Belgium, the inoculation in favor of this disease has acquired a not inconsiderable degree of support and extension. The practice, at first, fell into great discredit with cattle owners from the number of lethal cases which followed, as well as the frequency with which loss of the tail followed from gangrenous processes. Inoculations on the dew-lap proved extremely disadvantageous, so that the extremity of the tail soon became the universally accepted point for inoculation, although not entirely without danger. If

we institute a comparison with reference to the loss from the inoculated disease, and that arising from natural infection, we find that it results quite in favor of the former; further we find the losses gradually diminishing with the perfection of the knowledge and method of inoculation.

In 1853, Dr. Ludersdorff was authorized by the "Konig press, Laude Oeconomie-Collegiums," to gather trustworthy information with reference to the value of inoculation, and reported:

"So far as his observations would allow of an opinion, the evidence gathered stood more in favor of, than against inoculation, and that the much-feared danger of this prophylacticum, bore no relation to the losses which resulted from natural infection, and hence that inoculation was deserving of the most careful experiment."

At the request of the French Agricultural Minister, a commission was formed, and the result published, by Bouley in the *Recueil de Med. Vetr.*, 1854, page 161, from which we take the following: From 9163 animals inoculated in Belgium, of which accurate knowledge was obtained, no visible local reaction followed the inoculation by 1567, while same was evident by 7623; of these 682 lost their tails, 22 suffered from extensive gangrenous disturbances, and 237 died. Of 2181 animals inoculated in France, over which trustworthy information was obtained, 523 demonstrated no local reaction, while the same was apparent by 1658; of these 524 lost their tails, 10 suffered from extensive gangrene, and 57 died.

Of 8643 well authenticated cases of inoculation in Holland, 2119 gave negative results, while positive were obtained by 6024; of these 239 lost their tails, 2 suffered from extensive gangrene, and 73 died.

Of 2861 inoculated in Germany, England, Austria and Italy, about which authentic information was obtained, the Commission report that negative results came to pass by 1294, and positive by 1567 animals; of these 147 lost their tails, 19 suffered from extensive gangrene, and 101 died.

Belgium by about 16%, France 25%, Holland 25%, and in other lands 48%.

The tail was lost in Belgium by about 7.4—8.95% ; France, 24—31.6% ; Holland, 2.76—3.96% ; other lands, 5.14—9.37%.

Extensive gangrenous disturbances appeared in Belgium by 0.24—0.29% ; France, 0.46—0.6% ; Holland, 0.02—0.03% ; other lands, 0.67—1.21%.

Died in Belgium, 2.58%—3.1% ; France, 2.61%—3.44% ; Holland, 0.85—1.20% ; other lands, 3.53—6.45%.

As an average from the above 22,348 cases of inoculation, we find that local phenomena at point of inoculation failed by 5476 animals, 24½% ; and the inoculation gave positive results by 75½%.

Fifteen hundred and eighty-two of the inoculated animals lost their tails, 7.08% ; 53 suffered from extensive gangrene, 0.24%, and 490 animals died, 2.19%.

Let us assume that the total loss following inoculation be 4%, and compare the same with the losses resulting from the natural disease. It is impossible to arrive at any exact percentage of the losses from the natural disease, the reports varying from 10—75% ; this great variation is dependent on the manner and frequency in which the disease has appeared in different localities and at different times.

Let us assume, with Rall, that about 30% die. To this we must add those animals which are slaughtered as unhealable, or from secondary disturbances, the loss from milk, and waste of flesh, treatment, etc. Rall gives this loss as 60%, and remarks that the same is not exaggerated. If we assume that 40% of the animals exposed to infection became manifestly diseased, we may assume the loss from the natural disease to be then about 24%.

The opponents of inoculation may object that frequently much less than 40% of the animals exposed to infection became diseased ; to this it may be said, that frequently, many more became diseased. According to a French Commission, from every 100 head of cattle exposed to infection, 30% became subjects of the disease. I must assert that by inoculations performed "lege artis," it is only very exceptionally that so great a loss as 4% will result.

The extent of the loss following inoculation is in a great

measure dependent upon the nature of the lymph which is used, as also upon the point selected for inoculation, and the following treatment.

We cannot form any judgment over the quality of the lymph without an accurate knowledge of the abduction's results, as well as the intra-vital condition of the organism from which the same has been obtained; further, it is necessary to know that some has been obtained and preserved with all the circumspection necessary to its purity, as it is self-evident that the fluid in question, in which the infectious elements are embodied, may, by failure in such circumspection, become, by decomposition or inclosure of noxious elements, the cause of most serious and unexpected complications, or the activity of the infective elements become lost. There is no doubt that in the above-mentioned facts is to be sought the true course of most of the negative results, and serious complications which have been charged to inoculation.

It is *absolutely necessary* that the elements to inoculation be obtained from an organism otherwise healthy, *i. e.* upon which no other complications than those of pleuro-pneumonia are present, *and the same must also be in the pure mild form*, so that in the lung in question neither purulent masses, ichor, or other deleterious elements can find admittance with the lymph. All experienced inoculators are well acquainted with, and frequently complain of the difficulties they meet with in their endeavors to obtain pure lymph, and they also know that only those who give every attention to the above peremptory requisites receive favorable results from their inoculations.

As at present we have no means of demonstrating, either chemically or microscopically, the presence of the infectious elements in a given lymph, so are we also unable to ascertain its degree of dispersion in the same. When hereto we take into account the individuality of each organism, the possibility of different external influences, as the pollution of inoculation's wound with dirt, we find an explanation for the varying results which often follow inoculations upon different individuals by one and the same lymph. Alas, against these things we are in a great measure at present impotent.

Above all things, however, *we can* exercise due circumspection in obtaining the lymph; one should ever remember "The wind soweth but the storm reapeth," *i. e.* those who inoculate with the lymph concomitantly ichorous elements, must expect gangrenous processes to follow on different parts of the body, especially the posterior parts, and which even with the best treatment, generally either terminate lethally or result in the animal in question losing the tail; hence lungs which offer the least appearance of suspicion must be carefully avoided as objects from which to obtain lymph. The same is best obtained from the interstitial connective tissue of the lungs, and from animals by which the disease is present in its early stages, and which are absolutely free from other complications. One wins the lymph by allowing the same to flow from the cut surface into a vessel conveniently placed to receive it; such fluid should be placed in a well corked bottle for twenty-four hours, and then carefully filtered and placed in a thoroughly close bottle under water and in the dark until wanted for inoculation. All experienced inoculators are united in expressing the impossibility which has met their endeavors to retain such lymph pure and active for any length of time, and this fact offers one of the great obstructions to the extension of inoculation in reference to this disease. Of late Goeroldt has recommended placing a piece of chloral-hydrat, of the size of a pin's head over or on the surface of every fifty grammes of filtered lymph, the fluid to be then placed in a perfectly clean and disinfected bottle (scalded out —B.) the same to be carefully sealed and placed under water in a cool dark place. While I have not tested this manner of treating the lymph (Putz), yet the same recommends itself to us, especially as I know Goeroldt as a trustworthy man.

The great importance of the necessity of great circumspection in obtaining, preparing and conserving lymph for inoculation, should be self-evident to every one who desires to reduce the losses resulting from the same, to the lowest possible degree. At the same time we must in no measure neglect to exercise a like degree of circumspection in the treatment and care of the inoculated animals. as well as any conditions which may present themselves during the action of inoculated disease. Of great

dietetic importance is a full supply of *pure* fresh air, cleanliness and a stable temperature of 10—12° C.

Inoculations in the dew-lap must be absolutely forbidden, as the loss from the same has been found to rise to from 5—8%. By exact following of the conditions which we have above discussed, the losses from inoculation should scarcely reach 2%, and this small percentage should be still more reduced by a trustworthy preparation, and preservation methodic in reference to the lymph. In reference to the inoculations-methodic, the lymph may be introduced by means of a lancette, or a bistoury, which, however, requires care and practice; much more suitable, however, is the inoculation-needle of Stricker, when one has a number of animals to operate upon. (A cub-cent. hypodermic syringe is the best instrument of all, not only as regards convenience, but cleanliness; the instrument here recommended (Stricker's) is in my opinion quite the contrary to what the worthy author says of it, at least some experience in inoculatory experiments of this and other kinds, where we are not limited to the smallest possible amount of material, leads me to recommend the syringe as the best and most convenient method—B.)

In regard to the "Impf-technik" (inoculation methodic) we find some very appropriate remarks by Roboüam in No. 7, "de Archives Vétérinaires" 1878:

"The inoculation by pleuro-pneumonia erysipelatodes is a most excellent regulation, when the lymph has been properly gathered and prepared, and the action of the inoculation is carefully watched for 28 to 30 days, especially in summer."

R. slaughters an animal complicated with this disease and takes the fluid from a freshly infiltrated portion of the lung, or some parts in the first stages of hepatization; he cuts the parts in question in different directions, and presses the same carefully out over a suitable vessel; in cooling, the fluid coagulates and is again pressed through linen, the lymph produced being carefully enclosed and set away when not destined for immediate use. Lymph taken from the dark colored portions of the lungs gives occasion to gangrene much more frequently than that which is taken in the above manner.

Before operation, R. carefully cuts the hair away from the end of the tail, and then makes three sections in the skin from 15 to 16 mm. long, which are afterward carefully washed by an assistant; after operating in this manner upon all the animals destined to inoculation, R. introduces the lymph by means of a lancette (from a cup containing the same held by an assistant) into the skin-sections, following which the tail is held by an assistant in an elevated position for a few moments to allow the lymph time to penetrate. The views of experienced persons differ very essentially over the "ens" of the inoculated disease.

Some opponents of inoculation have asserted that like results would follow the inoculation of indifferent fluids, such as milk; such assertions are entirely groundless and without every scientific justification. That the introduction of foreign elements in the subcutis of the tail or other parts may often lead to inflammatory phenomena at the insulted point, no one denies; the mere section of the same, with neglect of the wound, would lead to like results, but such do not constitute the "ens" of the inoculated disease. The same is only to be expected when a pure specific lymph has been introduced into the subcutis in a sufficient quantity. It is self-evident that inoculations with a lymph which a few days previously was mild and active, may be followed by very unwished for complications if the same has been the seat of decomposition in the meantime. In such cases it is very questionable if the local reaction is capable of offering any protection against natural infection; this could only result when the specific elements of the lymph had suffered no disturbance from the processes of decomposition. I again repeat that *local reaction* must not necessarily be looked upon as a sign of sufficient, *i. e.* protective action of the lymph, as the same can be produced as said, by an irritant, giving access to the parts in question in quantity sufficient.

If, however, we look upon the essentiality of the inoculated disease, as a penetration of the tissues of the inoculated organism with the specific elements of the disease, and not as mere local inflammatory phenomena then the latter become for us things of secondary importance. As we can well see that inoculation with a lymph containing elements of decomposition should be followed

by inflammatory phenomena, at the point of inoculation, without giving to the organism any protection against natural infection, so may also see good reasons for supposing that a genuine inoculated disease may produce immunity against natural infection without the presence of any striking local phenomena at point of inoculation. If a proliferation of the specific elements at point of inoculation is an absolute necessity, it is very questionable. Chauvau has well shown that, in reference to variola, the local phenomena may fail and yet the organism be protected against natural infection for a variable length of time.

Hence the "ens" of the inoculated variola, as well as of the disease in question, must be sought in quite different phenomena than local reaction at point of inoculation. As we are at present completely in the dark with reference to the essentiality of the natural disease, it is self-evident we cannot expect any more knowledge with reference to the artificial; so much is certain, that it cannot essentially differ from the natural disease, as both diseases owe their existence to the specific, yet unknown infectious, elements of pleuro-pneumonia erysipelatodes.

As we must assume that the natural and the artificial disease are essentially similar, and as we know that organisms which have resisted the ravages of the natural disease lose their receptivity for the infectious elements, if exposed to the same, for the remainder of their lives as a rule, we cannot see why the same result should not follow by animals which have surely passed through the artificial disease. This assumption is at least justinable until the contrary is proved to be the case. We do not mean to infer that an immunity against natural infection will follow every case of artificial disease during the life of the questionable organism. Many cases are on record where animals have became the subjects of the natural disease in a year or less, where the inoculation had given every phenomena of positive affection. Such cases, however, form the exception where the inoculation is performed lege artis, and there is no rule without exceptions. The experiments of Willems and others demonstrate clearly enough the specific action of the elements of this disease upon cattle, while negative results invariably followed inoculation with the same upon dogs,

sheep, goats, swine, rabbits and fowls. Although at present the greater number of professionals and educated cattle owners place confidence in the prophylactic power of inoculation by pleuro-pneumonia, yet it is not right to say that the same is as yet accepted universally; to this end it is necessary that all interested persons and professionals work exactly and methodically in this very profitable path, and one of so much national economical interest.

DISEASES EXISTING IN HORSES WITHOUT MANIFEST SYMPTOMS.

By Robt. Wood, V.S., Lowell, Mass.

Autopsies, made after sudden death, or after illness of short duration, often reveal latent disease in every tissue of the body, many times in the most vital organs, the character and magnitude of which often astonish the practitioner, that such morbid changes in the various organs could possibly exist, and the animal perform daily labor without the first manifest symptom of its existence to those around him and using him daily; and yet such is the fact, well known to those who have had years of practice and who make autopsies. I do not offer this to those practitioners just mentioned, but for the benefit of our younger Vets., who have not had the opportuuity of seeing such cases, at least not many, with the hope of appreciation. As an illustration I will relate a few cases in my own practice:

Case 1.—Bay horse, eight years old, was taken with influenza, with several others in the same stable, showing the same symptoms, and receiving about the same treatment. I being confined to the house at this time by sickness, my son attended him. On the fourth day he informed me that three of the cases were convalescent, but the fourth one did not improve, appeared quite weak, and refused to eat. The owner sent a hack for me, and requested

my presence. Accordingly I rode to the stable. For my safety and convenience the horse was led into the office. His first appearance did not indicate great sickness, pulse 42, respiration 16, temperature of extremities about natural, color of membranes also; no evidence of pain. By auscultation I could not detect any unnatural sound in the chest. I ordered the horse led to my infirmary, half a mile off, so that I could watch him closely. After receiving treatment there he lay down, and remained quite comfortable for several hours. This was on Tuesday. Very little medicine was given him; simply had good nursing, and until the Friday night following appeared slowly improving, his appetite middling. On visiting him in his box stall, before I retired for the night, I found him eating his bedding (clean straw), and saw nothing to prevent his recovery. On the following morning found him dead, having apparently died without a struggle. An autopsy revealed tuberculosis of both liver and spleen, the liver weighing thirty-three pounds, and the spleen twenty-eight pounds. No evidence of disease in any other part of the organism. This horse was used in a livery stable for a year previous, and was always in good flesh, and considered able to work hard until about a week previous to death.

Case 2.—A large gray horse, belonging to a manufacturing company, owned by them for several years, and kept for driving and use in a cart about the yard. My attention was called to him on Monday; found what is commonly called a case of "staggers." On making inquiry I learned the horse was taken ill on the Saturday previous, that he had been bled and physiced by a man who had been many years in the army in Canada, but who was at this time an employee on this corporation, and said he had had experience among the army horses. The horse, while we were looking at him, had a severe paroxysm of the disease, and used great force to make his way through a bale of wool, which had been placed in front of him to prevent him injuring his head, and while doing so voided his urine, in quantity about half a pint, which stood upon the floor nearly half an inch thick, resembling glue in color and consistency, and containing a large proportion of albumen. Gave a laxative ball and two drachms of extract of

belladonna, and suggested bathing the head with cold water frequently. On the following morning again visited my patient (four miles from Lowell), was informed that within one hour after giving the ball he became quiet, and had remained so up to this time, and was considered by those in charge of him much better. The person who had treated him at first said, "I have seen plenty of such cases, and will, if you will give him another of those balls, warrant him to get well." On examination I found him nearly pulseless, an occasional sighing respiration, membranes blanched, extremities cold, and our friend was much surprised when I refused to give any medicine, and declared my prognosis "that the animal would not live through the day," and that the symptoms indicated chronic disease of some other organ than the stomach, and that it was, judging from the character of the urine seen the day before, of the kidneys. At noon the superintendent came for me in haste, saying that the horse had fallen and was struggling violently. On my arrival I found my patient in violent paroxysms, and suggested immediate destruction, to which the parties consented. Accordingly an axe was used, and an autopsy made in the presence of Dr. Edwards, the physician of the village, and the kidneys proved the seat of disease and the cause of symptoms presented. They were very large, weighing seven pounds and a few ounces, and in a softened and disintegrated condition, Dr. Edwards remarking that they strongly resembled human kidneys in the last stages of "Bright's disease." All the other organs in the body were ordinarily healthy, and our opinion was that the symptoms were produced by "*absorption of the abnormal secretion of the kidneys*" (Mr. Editor will please give his opinion upon this, our position).* This horse had always been in good condition apparently, up to the Saturday previous, and he only lived three days after the first attack, yet without doubt the kidneys had been diseased a long time.

* We do not exactly understand the meaning that our correspondent gives to these words. If it is intended to say that the symptoms were due to uræmic poisoning of the blood, we would agree with him; but if any other meaning is attached to the sentence, we would ask a more definite explanation before giving our opinion.—EDITOR.

Case 3.—Bay mare, owned in this city, about ten years old, taken with symptoms of colic. The family physician, who lives near by, being consulted, prescribed "tincture opii" in large doses. Six hours after, the symptoms not being relieved, I was sent for. I found the animal standing and somewhat comatose, also very weak. My first impression was that she was dangerously under the influence of opium. Her pulse quick but very feeble, membranes highly injected and of a dark color, respiration slow, long inspiration, short expiration, looking around as though anxious to lie down, but dare not. My diagnosis was chronic disease of some internal organ, yet I could not say definitely the seat of disease, believing the symptoms had been changed by the remedy. My prognosis, death in a few hours. This mare died about midnight. On the following morning made an autopsy in presence of the physician, Dr. Jenness, and found the seat of disease to be the kidneys. On removing them we found them weighing eight pounds, showing fatty degeneration, and they, as well as the surrounding tissues, were highly congested, giving evidence of acute disease supervening on chronic disease, which must have existed sometime. This mare had been used daily in a rather heavy wagon, carrying out about the city merchandise in the shape of butter, eggs, vegetables, etc., and had worked well up to the time, as above stated.

EDITORIAL.

VETERINARY SANITARIANS.

In our last issue we endeavored to set forth the necessities demanding the formation of a veterinary department in connection with the proposed National Health Bureau in Washington, and while we believe most members of the profession desire to see this end accomplished, and will lend their aid in its attainment, there is another important matter, to which we. at the same time, should turn our attention, and that is to the appointment of regular veterinarians on local, city and State Boards of Health.

In the cities of New York, Boston, Brooklyn, and perhaps some others, veterinarians have been added to the Health Boards; but the position has been only an honorary one; the services of the consulting surgeon being rarely called in requisition.

In so far as we know, out of the few States which have established State Boards of Health, the State of New-Jersey is the only one in which a consulting veterinarian is appointed, and that honorary position is filled by our esteemed friend, Dr. James Corlies.

There is not a State in the Union, which could not, with advantage to itself, follow the example set by our sister State; for the services of the skilled veterinarian, in conjunction with the State Board, would be of untold value in the preservation of human health, and the protection of live-stock interests.

In all parts of our country, enzootic and epizootic diseases, at irregular periods, make their appearances; as note the continued frequent outbreaks of contagious pleura-pneumonia in New York and New Jersey; the recent enzooty of parasitic bronchitis near Morristown, New Jersey, and the constant ravages of the so-called "hog cholera" throughout the great breeding districts of the West.

The great losses which these, and other diseases, have occasioned our live-stock breeders, has brought the question of remedying the evil fully before the public mind, and in the light of veterinary science we hold that it is not only our *right*, but that the public health, and individual prosperity and wealth, *demands* the presence of the veterinarian in all Health Boards; not as an unpaid official, but with a remuneration proportionate to the services rendered.

We find in all European countries, especially those divided into numerous districts, where veterinary surgeons exist in sufficient numbers, that each district has a special veterinary board, working under the supervision of one general board; the same condition of affairs could and should exist in all our States, for veterinarians of education and eminent scientific attainments are rapidly increasing in every part of our land, and the public cannot afford to longer ignore their services in so important a matter.

Let every city then have its Board of Health constituted with an able veterinarian, responsible to the supervision of the State Board, which in time shall be controlled by the National Sanitary Bureau; then, and then only, can veterinary science give to the public the protection which the preventive measures of thoroughly applied, known sanitary laws always guarantee.

VETERINARY AND HUMAN MEDICINE.

Some time ago we published an article, in one of our contemporaries, in which we endeavored to set forth the advantages that would accrue, not only to the public, but to veterinary and human medicine as well, if many members and contemplating students of human medicine, would devote their attention to the study of the veterinary specialty.

In a subsequent number of the same journal, appeared a reply to our article, calling us to the bar of the medical fraternity, for the asserted audacity of making a proposition, which our respondent elected to treat as an intentional insult.

The matter rested there, and "E.H.R.O.B.E.L.C.," no doubt felt, in presence of the silence following his answer, that he was probably about the only one in his profession who entertained opinions kindred to those he had so facetiously expressed, while we felt sure that the great majority of physicians believed with us, that the medical ranks were over-crowded, and veterinary medicine offered both an honorable and lucrative field of escape from the impending dilemma.

In this issue of the *Review* we make room for the letters above referred to, and also a report of the proceedings of a Medical Society in Maryland, wherein our views are supported by able and respectable practitioners of human medicine, who look upon veterinary surgery in its proper scientific light.

It is particularly gratifying to us to find medical men awaking to the advantages which our profession presents, for it promises us a much needed assistance in speedily reaching the high eminence in public estimation, which the importance of our specialty demands.

This report from the "Harford County Medical Association," is probably the first of that tenor. but it is to be hoped other associations will follow the lead so boldly taken, and that eventually the American Medical Association will lend its great aid in making veterinary medicine in the United States, what it is in many European countries, *second to none.*

VETERINARY INSPECTORS.

The recent inquiry, instituted by the English government, relative to the veterinary sanitary regulations of this country, has influenced our Secretary of State to issue a circular to the Collectors of our several ports, authorizing them to "cause an inspection to be made of all cattle exported to Great Britain." The duties devolving upon such an officer can only be performed efficiently by the skilled veterinarian, and the appointment of inspectors from any other source will be simply a subversion of public health and trade to personal interests.

Neither do we believe our English friends would be satisfied with the certificate issued by inspectors appointed outside the ranks of the veterinary profession, for they would not be worth the paper upon which they were written.

Then let us anxiously watch all these appointments, and see whether they are made in the interest of the public good, or given to those feeders at the public crib who can control the greatest amount of perverted political influence.

NOTICE.

Believing that an incorporated State Veterinary Society could obtain readily from the Legislature, full recognition and protection against quackery, we would feel greatly obliged to any of our readers who will send in the names and addresses of regular graduates from any part of this State, in that we may communicate with them upon the subject.

VETERINARY COLLEGES.

From the German "Veterinaer Kalender" for 1879, *Vienna.*

TRANSLATED BY J. GERTH, STUDENT.

AMERICA.

New York. (The American Veterinary College.) Faculty: Dean of the Faculty, Prof. Dr. Liautard; Professors: Dr. A. Large, Dr. A. W. Stein, Dr. J. L. Robertson, Dr. S. R. Percy; Adjunct Professors: Dr. A. A. Holcombe, Dr. F. A. Lyons; Lecturer on Histology: Dr. M. N. Miller; Demonstrator of Anatomy: Dr. J. W. Coates; Prosector of Anatomy: Dr. A. H. Rose; Curator of the Museum; R. N. McLean.

The college was organized in 1875, and it is the first Veterinary Institute in the United States promising to be successful. The faculty is the same that constituted the "New York College of Veterinary Surgeons" for ten years. (Closed lately). The college follows in its course of instruction, the European system, especially that adopted by the French schools. This is principally to be ascribed to its present and deserving Director, Dr. A. Liautard. *To be admitted* into this most creditable and eminent Veterinary College of the United States, a good academical or a strict matriculatory examination is required. *The course of instruction lasts three years*, and it endeavors to give the students a thorough theoretical and practical education. It comprises the fundamental medical sciences, and the special branches of veterinary medicine. About 400 lectures and clinics, on comparative and veterinary anatomy, physiology, chemistry, theory and practice of veterinary medicine, surgery, obstetrics, materia medica and therapeutics, jurisprudence, sanitary medicine, external forms of the horse, art of shoeing and pharmacy, are delivered during a regular Winter session of five months, and a Spring session immediately following. The students are obliged to pass an examination at the end of every year. The museum contains the largest and best collection on the American continent, consisting

of nearly 2,500 morbid and healthy specimens. These specimens are used to illustrate the lectures, and serve the student in his private studies. With the exception of this institute, there is, strictly speaking, no other regularly organized college in the country. In America veterinary medicine has not entirely laid aside its leading-strings (infancy) yet. Several State "Associations" exist in the country, but they claim little importance. Still the *United States Veterinary Medical Association* deserves to be mentioned, of which, the majority of regular graduates in the United States are members.

BELGIUM.

Cureghem. (Veterinary College). Faculty: Director: A. Thiernesse: Professors: Melsens, Gerard, Gille, Wehenkee, Degire, Laho, Longe, Dessart; Repetitors: Courtoy, Reul, Dupuis, Gratia.

DENMARK.

Copenhagen. (Royal Veterinary College and Agricultural High School). Faculty: Director: Dr. H. Crabbe; Professors: H. G. Bendz, S. H. O. Bagge, H. V. Stockfleth, V. Prosch, C. T. Barford, J. Lange, J. G. Schiodte; Docents: N. J. Fjord, H. T. V. Bay, E. Becker; Apothocarist, Rasmussen.

This institute was founded in 1773, is well provided with stables, and with a good museum. The course of study is ended after five sessions, and generally lasts three to three and a-half years. In the year of 1876–77, 1,016 horses and 460 dogs were treated at the college clinic, and 1,950 horses, 843 cattle, 621 dogs and 264 swine at the ambulatory clinic. The Kingdom has a Veterinary Board of Health formed of seven members. The country is well provided with veterinarians.

GERMANY.

Berlin. (Royal Veterinary Institute). Faculty: Director Prof. Dr. Roloff; Professors: C. F. Mueller, Dr. J. W. Schnetz, Dr. Munk, Dr. Moeller, Diekerhoff, Dr. Pinner, Eggeling; Repetitors: Ellenberger, Wolff.

Dresden. (Royal Veterinary Institute). Faculty: Director: Dr. Gottlieb Haubner; Professors: Dr. G. A. Leisering, Dr. O.

Siedamgrotzky, Dr. Hofmeister, Jul. Susdorf, Dr. J. G. Huebner; Docent: Dr. Albert Johnr; Assistants: Wilhelm, Rost; Teacher of Shoeing: Clemens Neuschild.

Giessen. (Veterinary Medical Department of the University.) Faculty: Director: Prof. Dr. Pflug; Repetitor: Dr. Winkler.

The veterinary medical department in Giessen is consolidated with the medical faculty of the grand-ducal Hessian Ludwigs University; it is under the direction of Dr. Pflug, and has its own hospital, anatomy and museum. The veterinary students attend lectures by the University Professors, Dr. Schneider, Dr. Hoffmann, Dr. Will, Dr. Buff, Dr. Eckhardt, Dr. Thaer, Dr. Buchheim, Dr. Perls. The approbation given to veterinarians in Giessen is rendered valid throughout entire Germany. The course of study comprises seven sessions, and examination takes place in the eighth. To be admitted, a good academical previous education is required (Prinia einer Realschule I. Ord. oder Realgymnasiums). The previous education is not demanded from foreigners.

Hanover. (Royal Veterinary Institute.) Faculty: Director: Prof. Guenther; Professors: C. Begeman, Dr. Dammann, Dr. Harms, Dr. Lustig, Dr. Rabe; Teacher of Shoeing: Dr. Bruecher; Repititor: Dr. Eichbaum; Assistant: Ernst. The lectures on chemistry, zoology and botany are attended at the Polytechnicum. Physics are lectured by a special teacher, Dr. Ehrlenholz. To be admitted, a good previous education is required.

Munich. (Royal Central Veterinary Institute.) Faculty: Director: Prof. Frank; Professors: Hahn, Feser, Friedberger, Dr. Bollinger, Dr. Forster; Docent: Dr. Harz; Prosector: Dr. Bonnet; Assistants: Kohlhepp, Beskert.

Stuttgart. (Royal Veterinary Institute.) Faculty: Director: Prof. Wilhelm Fricker; Professors: Dr. Eduard Vogel, Dr. Schmidt, Roeckel, Dr. Jaeger; Docents: Dr. Ahles, Sussdorf; Agricult. Inspector: Saur; Teacher of Shoeing: Mayer.

ENGLAND.

London. (Royal Veterinary College.) Faculty: Director: J. B. Simmonds; Professors: W. Pritchard, R. V. Tuson, G. T. Brown, T. S. Cobbold, F. W. Axe; Demonstrators: Jno. H. Steel, D. M. Storrar.

FRANCE.

Alfort. (Veterinary College.)

Lyons. (Veterinary College.) Faculty: Director: Prof. Chauveau; Professors: Rey, Saint-Cyr, Arloing, Peteaux, Cornevin; Chefs de Services: Peuch, Galtier, Durhone.

Toulouse. (Veterinary College.)

HOLLAND.

Utrecht. (Royal Veterinary College.) Faculty: Director: A. W. H. Wuertz; Professors: Fr. C. Hekmeyer, J. K. E. van Laer, G. J. Hengeveld, L. J. van der Harst, F. Th. Weitzel, W. C. Schimmel, C. A. Pekelharing; Prosector: A. Th. Verhaar; Teacher of Shoeing: W. A. H. van Harsen; Assistant Chemist: J. C. van Effen.

This college was founded in September, 1819, and opened on the 10th of December, 1821, in consequence of an edict by King William I. Sixty-one students matriculated for the session of 1878-79, among whom 24 are studying in their first, 12 in their second, 15 in their third, and 10 in their fourth year. Nine of these are military students.

(To be continued.)

CORRESPONDENCE.

"IMMOBILITE" DUMMKALLER (GERMAN) "AMENTIA"(TECH).

By F. S. Billings, Berlin.

"*Immobilite is a term applied by French veterinarians to those causes of muscular irregularity manifested by the inability of the horse to turn round quickly without falling; he may be able to trot in a straight line well enough, but when turned round sharply immediately falls. A modified form of this disease is very often encountered when the animal, although able to turn without falling, does so with great difficulty, throwing the hind legs about in an awkward, unsteady manner, and seemingly without power to regulate their movements, the hind quarters reeling from side to side, clearly showing that the mus-*

cular movements are improperly controlled by the power of volition. This is commonly called broken, strained, or jinked back by horsemen. It is not due to any fracture, nor always to any external injury, but is a progressive disease, arising from some alteration of structure in the spinal cord from diseases of the vertebræ, or from granular degenerative diseases of the muscles themselves."—Williams' Principles and Practices of Veterinary Surgery, 2d Ed., Edinburg, 1875, p. 247.

Whether the above is also to be found in the first edition of the *only text book* we have in the English language or not, I do not know, but sufficient to say, it has been before the English public and veterinary profession from 1875 to 1878, and notwithstanding a long-continued, and in some instances bare-faced, plagiarism of French veterinary literature, yet during all this time this most serious error has remained unnoticed and uncorrected, so far as my own knowledge goes. I say *serious error*, for, with all respect for Mr. Williams' earnestness and worthy endeavor, the above statement from his work is in nearly every respect absolutely false, if an attempt to apply it to the condition which "French veterinarians designate as immobilite."

The oldest French work which any present library offers me, is the noted "Cours d'Hippiatrique," par M. Lafosse, fils. Paris, 1772. The noted opponent of Bourgelat, and to my mind his great superior, tells us that up to this time no veterinary author, "auteur hippiatrique," had made mention of this disease—conditioro—although the same was well known to horsemen and dealers, and classed with them among the conditions belonging to the class "cas rehibitores" of forensic diseases. As phenomena, he tells us the animals are very loth to mind, that they remain in the place where one places them, that if suddenly stopped with limbs in an abnormal position, they do not move from the same with any alacrity, that they eat slowly and irregularly, that the head is frequently held for a long time motionless, etc., and that the malady bears some resemblance to that which mediciners describe under the cognomen of catalepsie. As causes he mentions fear, also that the condition may come to pass after a long sickness, also poorly developed and formed animals are predisposed thereto. He considered the condition as incurable, an opinion which still continues and will probably to eternity.

As known, this great work of Lafosse continued to be the spring from which much of the veterinary literature for the fifty years succeeding him drew its nourishment, so that we can safely pass over all the literature between his time and our own, and turn to books which every veterinarian should have in his library. And as we have many Germans among us, I will first quote a few words from the French translation of Prof. Roil's "Manuel der Pathologie der Hausthiene," 3d Ed., by Dereche el Wehenkel, Paris, Bruxelles, 1869, Vol. 2, p. 36; 4th German Edition, Vol. 2, 37:

"On donne a nom a une maladie apyretique a marche le plus souvent chronic, se presentant dans l'espece chevaline et se manifestant par des troubles de la conscience des sens et des movements."

"Die Dummkaller ist eine chronische, fieberlose bis jetzt noch als anheilbar zu bezeichnende GEHIRN KRANKHEIT des Pferdes die sich durch Storungen der sensoriel Functionen in den verschiedensten Graden kured giebt und immer an dem gesammten symptomcomplex und dem chronischen Verlaufe zugleich zu erkennen ist." Gerlach, Haudbuch d. Gerietlichen Thierheil Kunde, Berlin, 1872.

Farther, those who desire to pursue the investigation deeper may refer to "Le Dictionnaire de Med. et de Chirurg., etc., Veterinaire," per Zundel, vol. 2, p. 260; "Le Dictionnaire de Med. et de Chirurg., etc., Veterinaire," per M. M. Bouley, Reynal et al, Tome 10, Paris, 1874, Article "Immobilite;" to the works of Haubner, Spinola, Fuchs, Kreuzer, and every modern continental writer of repute.

The ætiology of the disease is to be sought in an accumulation of fluid in the laterial and other ventricles of the brain, in consequence of anticipatory inflammatory processes, thrombosis, etc. (This fact was first discovered by Wolstein, 1738–1802, the most noted German veterinarian of his day, student of Lafosse, and the real founder of the Royal Veterinary Institute of Vienna, although a beginning had previously been made by Scotti). This fluid does not produce the peculiar phenomena by compression of the brain substance, as assumed by most authors, but the phenomena and their peculiar progressive development are due to the gradual atrophy

of the functional and conductive substances of the brain from the pressure exerted by the fluid upon it. Compression of the brain, as spoken of by authors, is impossible, the brain and its appendices filling the entire cavity; only by atrophy of its substance can it become smaller. The phenomena of the disease have been quite well indicated by Lafosse, and consist chiefly in sensorial disturbances; the horse is more or less, or even completely, inattentive to the commands given it, the ears move in an automatical manner, having no connection with the direction of the eyes; the latter are more or less expressionless; the animal frequently stands for hours with head in a corner of stall; if given food eats irregularly, frequently holding it between the teeth for minutes with no endeavor at mastication; prefers food from the stall floor, rather than from manger or rack; pays but little attention to the whip; is frequently almost devoid of feeling if the crowns of the feet are trod upon, even with all one's weight; this is generally much more prominent by the anterior than the posterior extremities; if the limbs are placed in abnormal positions, especially crossing the anterior ones, or crossing the fetlock of one over the metacarpus of another, the animal frequently allows it to remain until it falls to the earth by its own weight as it were; pulse and heart retarded, arterial pulsation slow, but full, yet not strong, peristaltic retarded, appetite more or less interfered with; in some cases such horses, when offered drink, plunge the nose at once deep into the bucket, as if blind. It must be emphasized that in all this no fever is apparent, and as Gerlach says, and as is necessary in all forensic cases, these phenomena—complex—must be more or less manifest and have been apparent for a certain period of time regulated by law from the date of purchase and without fever or other acute diseases during that time to constitute a case. This period is fixed in Prussia at twenty-eight days; Hamburgh, four; France, Elsass, and Lothringen, nine; Belgium, fourteen; Saxony, fifteen; Switzerland, twenty; Baden, Bavaria, Hesse, Frankfort-on-the-Main, Hohenzollern, and Wurtenburg, twenty-one; Austria, thirty days from date of sale.

In speaking of the ætiology of this condition we have only alluded to the same, not having time to go into this matter speci-

fically. We have said that the primary cause was atrophy of encephalic substance from pressure of a fluid in the ventricles of the brain. The same *may be* caused from osseous or other tumors within the osseous walls, but this is very seldom. I believe Zurn, of Leipzig, has constituted *one* such case. In one sentence, leptomeningitis, with extension to the choroid plexûs within the ventricles, may be looked upon as the chief cause, with subsequent exudation of fluid. The normal amount of fluid found in the lateral ventricles seldom comes to 10 grammes in each. All amounts over that may be looked upon as abnormal. The amount of fluid may increase to 30-45 grammes, which is an excessive amount. From the above it will be apparent that we have not before us a condition characterized by paralytic or stumbling movements of the posterior extremities, or a condition due in any way to "a progressive disease arising from some alteration of the structure of the spinal cord from diseases of the vertebræ, or to granular degeneration of the muscular substance," or with a disease the treatment or description of which belongs in a work on veterinary surgery.

As said by Lafosse, treatment is useless. It is self-evident that the condition in question is well enough known to our English veterinarians, but has never been separated from meningo-encephalitis, to which, especially the former, it is the most frequent conclusion. The cause of this is, in my opinion, to be found in the very infantile development of forensic veterinary medicine by us, and all matters pertaining to the same, whether belonging to veterinary police or the forum of laws. We have work before us, my American colleagues. Work and study, and study and work, before we can place ourselves on a level with our European brothers, and only by one well organized national institute can we succeed. As a matter of historic interest I place an appendix hereto, a very short resumé from a once celebrated work, "Hippiater Expertus," by Georgü Simonis Winteri, Norimbergæ, 1678, page 22, where this disease, or better, its precusor, is treated in a very drastic manner under the heading "De Furore Melancholico et maniaco quo equus obstupescit et subinde titubat." It attributes the disease, or rather phenomena, to an unnatural accumulation of

the "sanguinis melancholici" between the skin and musculature, and "ex atra bili orti," also in the spleen, "inque liene residentis;" the first causing a feeling of external pressure to the animal in question, as well as disturbing the ascent of the spirit-psyche to the head, etc. He also speaks of the inheritability of the melancholic disposition and of the influences which, it is said, are exerted upon such organisms by bad treatment and *the presence of Jews.* Just how the latter irritant worked, the learned author fails to tell us.

CUTTING CRITIC.

Mr Editor.

What a case! That cutting case, which is reported in the December number of the Review. Are the Americans to be blamed for not recognizing the veterinary profession, when such men are allowed to call themselves veterinarians, and practice veterinary medicine and surgery in such great cities of the United States? If it had been about five years ago, I would say, no; but now, as the educated veterinarians are on an equal footing with the human physicians and surgeons, I will say, yes; because the science of veterinary medicine and surgery has been brought before them time and time again, in the veterinary journals, agricultural and sporting papers, both of this and other countries, also by the energies of every individual connected in any way with the profession.

Now, Americans, are you asleep, or dreaming with your eyes wide open, looking at such empiricism and quackery going on in such a manner as this? Wake up and see, that there is not a "stoppage from some cause," which you cannot make out, but diagnosticate the trouble from the symptoms and history so plainly brought before you, and your treatment will be very simple. You must not go it blind any more, but take up your journals and papers and study the present condition of the country in regard to veterinary science, and then you will see there is at least one way for the start. Go to the Legislature and have a bill passed, that no person can practice veterinary medicine or surgery, unless he is a graduate of some recognized school, or

licentiate from a board of examiners, and that will be a "cathartic ball" a little over "six in strength," which will purge the indigestible, unscientific, and parasitic empirics out of this great country of yours, and let them decay so as never to be brought in existence again under the same form. You ought not *"to blote"* the country with this empiricism, but clean it out, and make them turn up the "whites of their eyes as if scared," and leave "them lie down spread out" to paw no more, and probably the "membranes of their eyelids" will be paler and the *brisket* open to leave more "blood from this cutting."

Veterinarians, physicians, surgeons, and laity, go to the Legislature, and see that this "band uniting the colon" of this country shall be kept in place by the educated veterinarians, and have a post mortem examination of this empiricism and quackery, and see that the "liver is sound," and make a line of demarcation, "an interstitial infiltration," (if I may use the term) between the so-called horse doctors, and educated veterinarians. Then your horses and cattle will be kept in a healthy condition, and provide the country with good "beef and porker," and you will provide against "the colon" of your agricultural interests getting "rotten" and the "bowels black." By so doing you will be able to have veterinarians to diagnosticate diseases, and save the country millions of dollars; and you can then prognosticate a country that will be unsurpassed in veterinary science, the worm destroyers taking a back track and no longer destroying the profession with their insidious parasitic influence.

TRUTH.

EDITOR AMERICAN VETERINARY REVIEW:

Dear Sir.—For some time past the great advantages gained by studying our profession in European schools has been loudly vaunted in the pages of both your journal and those of a leading sporting paper; the prolific pen of one writer having been busily engaged in attempting to establish their superiority. A sceptical profession may not have appreciated the excellence claimed for these schools by the erudite Billings (who can at best be acquainted with but one side of the question), and I doubt if his argument will be

materially aided by an article that appeared in the last number of the REVIEW, nothwithstanding the fact that the M.R.C.V.S. who contributes the report referred to, proves that he possesses abilities not usually found among veterinary surgeons educated in America.

The anatomy I was taught while at college must be at fault, for the gentleman reports a case of an "incised wound of the metacarpus," (presumably metacarpal region), which was deep enough to enable him to lay "two fingers between the bone and the tendons touching the integument upon the opposite side." Interesting certainly, but how can he account for the absence of the superior suspensor ligament which is generally supposed to be situated upon the post face of the metacarpus?

A few lines further on we are informed that *one half drachm* of chloral hydrate was administered to quiet a very excitable animal. Is it possible that European education has some influence over the physiological or thereupeutic action of medicines? Presumably so, for although Dunn in the latest edition of his Veterinary Medicines gives from ℥i to ℥ii of chloral hydrate as the dose, and while I am not aware of its having been ever used before in America in smaller quantities than ʒii, it would in this case appear to have had the desired effect. It is a pity that a similar result cannot be obtained by the majority of practitioners.

But in nothing is the distinction between the graduates of the two continents so markedly manifest as in surgery. Mr. Plageman applied a tourniquet to control the hæmorrhage while the metacarpel artery was being ligated, and this having been done, allowed the tourniquet to remain without being slackened for *twenty-four hours;* nay, still more heroic, reapplied it for thirty-six hours to control "a slight continuous hæmorrhage!"

By what symptom was such treatment indicated?

There are other points of interest in the report of this case teaching me to look with still greater pride to an American school as my alma mater.

Respectfully,

NEMO.

REPORTS OF CASES.

INQUIRY FOR AN OBSCURE DIAGNOSIS.

By J. F. Winchester, D.V.S.

On November 14th, at 7 P. M., I was called to see a horse 10 years old, and obtained the following history. About one year ago he had an attack of "colic" and was treated with a cathartic, and for the past three weeks he has shown "weakness behind," most marked upon the right side, being quite lame while going down hill. When at rest he would roll, very stiff when started, but gradually becoming more limber with exercise. On November 12th, while standing in the shafts, he fell down, broke them and was only got up with some difficulty, but to this no attention was paid. On the 13th he fell again and more trouble being experienced in getting him up, he was taken out of harness and put into the barn, laid down that night and got up next morning. At noon on the 14th, he fell down on the right side and as he could not be raised, I was called, and found him still lying on that side, perspiring profusely and apparently in considerable pain, throwing the head round to the left side and grunting. Pulse at the time was 60 full, respirations 24 and labored, temperature 100° F.; on pricking him over the hind extremity I found sensation complete and could move the legs all right. He urinated and passed feces frequently and normally. Diagnosis—— ?. Prognosis: very grave.

These symptoms were gradually aggravated till next A. M., when he died at 10 o'clock. Post mortem made twenty-four hours after death. On opening the abdomen and removing the intestines, I found the colic arteries and veins full of blood and the mucus membrane of the colon deeply congested. The posterior aorta from where it leaves the diaphragm to the great mesenteric artery, showed four aneurismal sacs, that at the mesenteric being calcified. At the quadrification of the iliacs I found a clot of blood, yellowish in color and quite firm, extending into the right external and internal iliacs; the rest of the abdom-

inal viscera were normal. In the heart was found a clot similar to that in the iliacs. The spinal cord and brain were normal as far as the eye could distinguish.

What was the cause of death?

What are the diagnostic symptoms of aneurism other than those obtained by manipulation with the hand?

HYDROPS OVARII IN A MARE, CURED BY THE OPERATION OF OVARIOTOMY, PERFORMED *PER VAGINA*.

By G. P. Penniman, D.V.S.

The patient, a bay mare, eight years old, and the property of a gentleman in this city.

Symptoms of œstromania appeared about the first of last April, and continued until the time of the operation, Sept. 28, or over five months; showing when driven, the usual disagreeable actions, and especially when met or passed by another animal on the road, at such times voiding urine and switching the tail, thereby casting the fluid upon the vehicle and its occupants. The latter symptoms appearing most when the subject was excited in any way. Diagnosis: diseased condition of one or both ovaries; form, uncertain. Prognosis: favorable if castrated.

Experimental treatment was pursued in compliance with the owner's wishes, for four months, but with no perceptible results. Permitting the subject to become pregnant with the hopes of a cure thereby, was from past experience considered unadvisable.

The animal was prepared for the operation in two days by short allowance of laxative food and some exercise.

Sept. 28. Was operated upon in the following manner. After being confined in the stocks, the bladder and rectum were emptied. Then the vaginal speculum, concealed knife, and the hand were carried at once into the vagina, and placed in position, then an incision about three or four inches in length was made through the wall of the vagina near the os-uteri, great care being used to prevent wounding the rectum and adjacent bloodvessels. These instruments were then withdrawn, and the ecraseur intro-

duced with the hand through the incision into the abdominal cavity, the ovary found, and the chain placed over it, the hand grasping the ovary until removed with the ecraseur. The second ovary was removed by the same manipulations, which completed the operation. Anatomical appearances: the left ovary was nearly natural in size, perhaps a little enlarged, showing several cysts upon the external surface, which contained serum. Upon making a section of the gland, one large cyst was found containing about two tablespoonsful of clear serum. The walls of the cyst were hard and thickened, and the substance of the gland considerably diminished. The right ovary was in a normal condition.

Immediately after the operation, the patient was placed in a box-stall, where it laid down at once upon its side, remaining very quiet.

About three hours later there were slight chills, but they soon disappeared, and for four days she remained down nearly all the time, and seemed much disinclined to move.

There was little or no appetite. Temperature but slightly elevated, and pulse not much disturbed. On the evening of the second day following the operation (Sept. 30), was decidedly uneasy, being up and down frequently for about half an hour. An anodyne was administered, and an injection of warm water given; the symptoms soon ceased, and there was no further appearance of them afterwards.

The animal urinated easily, and defecation was aided by enemas daily.

Oct. 5. Remains in a standing position most of the time. Appetite increasing. Looks brighter.

Oct. 12. Upon vaginal examination a portion of the rectum was found adhering to the wound in the vagina, and the wound itself was healing rapidly, with but slight tumefaction of the parts.

Oct. 16. Was discharged.

Oct. 24. Was given gentle exercise in a road wagon, the animal being in high spirits, and showing no signs of the former trouble. She has been driven since then about the city and on the road enough to establish the fact of a cure.

PUNCTURED WOUND OF THE FOOT.

Editor *Veterinary Review.*

'Tis not that the case was in any way unique, that I send you the enclosed report, but, that recovery was so rapid, and promises soon to be complete. A young black gelding received a punctured wound of the near hind foot, in which the nail passed vertically through the frog, to the left of the median line, perforating the tendon of the flexor pedis perforans, and driving a portion of the cortical substance of the navicular bone into the cancellated structure, where it remained. The treatment commonly adopted in punctured wounds of the feet proving unavailing, it was finally determined to operate upon Nov. 8th.

Being kindly assisted by one of the students of the American Veterinary College, a good portion of the outer half of the sole was removed, about one-third of the entire frog, the other intervening soft tissues, and a crescentic-shaped piece of the flexor tendon, so that nearly a half of the inferior surface of the navicular was laid bare.

The portion contused by the nail was found firmly imbedded in the deeper parts of the bone, surrounded by tissue undergoing caries. The diseased bone tissue was carefully removed with the drawing knife, the wound dressed with carbolic solution, and ordered placed in cold water for forty-eight hours.

The synovial discharge from the navicular bursa ceased shortly after the operation, but inflammation, with a strong tendency to suppuration, rapidly spread along the tendon and through the connective tissue of the heel and adjacent parts, so that in a few days, a counter-opening was made in the hollow of the heel, from which considerable pus escaped, mixed with a copious discharge of synovial fluid. Immediately the surgical wound granulated rapidly, the opening closed, the injured bone was covered from sight in less than a week, and the entire wound healed in four weeks time.

The counter-opening discharged profusely for about two weeks; gradually losing its synovial character the pus became pure, diminished rapidly until the end of the fifth week, when the

wound was completely healed over and the animal using the foot quite well. No remedies were used in the treatment of the wounds except carbolic acid solution (1 to 20) with an occasional painting of the granulations with nitrate of silver. At no time did the constitutional symptoms become marked, the temperature never rising beyond 102.8° F., which was on the fourth day after the operation; the appetite was retained throughout and the animal lay down nearly every day. The inflammatory new formation at the coronet, always quite prolific in these cases, is rapidly undergoing resorption from the stimulus of a cantharides blister, so that there is a probability of the convalescence terminating shortly, without even a perceptible impairment of function.

A. A. HOLCOMBE.

NEW YORK STATE VETERINARY SOCIETY.

28TH REGULAR MEETING.

The regular monthly meeting of the New York State Veterinary Society was held at the American Veterinary College, on Dec. 12th, at 8 o'clock p.m., the President, Dr. Robertson, in the chair.

The following gentlemen answered the roll call:—Drs. Liautard, Robertson, Burden, Bell, Lockhart, McLean, Coates, P. Nostrand, Field, Hopkins, Holcombe and Rose.

The minutes of the previous meeting were read and adopted, with the following correction:—A gold medal to be offered to the student who shall pass the best examination at the American Veterinary College, on any subject selected by the Committee, instead of a pocket case.

The Committee appointed to investigate the standing of Mr. J. B. Coleman, reported progress.

Dr. Liautard offered the name of C. H. Hall, D.V.S., of 1436 3rd Avenue, New York City, graduate of the American Veterinary College, as applicant for membership, which was referred by the chair to a committee, composed of Drs. Lockhart, Burden, and P. Nostrand, to report at the next meeting.

Both a majority and minority report were received from the committee appointed to determine upon a plan of action to protect the interest of the veterinary profession in this state, and was laid upon the table.

It was then moved and seconded that the reports be accepted and the committee discharged—Carried.

It was moved and seconded that a committee be appointed to draw an act of incorporation of the Society, and to call the attention of all the graduates in the State of New York in good standing, to its existence, asking them to join our Society, said committee to report at next meeting—Carried.

The chair appointed Dr. Liautard as said committee, with power to call for assistance from the members.

The Treasurer's report was received, showing a balance of seventeen dollars.

The Society now proceeded to the election of office-bearers, which, on ballot, resulted in the election of Dr. McLean as President, Dr. Robertson, Vice President, and Coates, Secretary and Treasurer.

Dr. Robertson, on leaving the chair, gave a short history of the Society, how it was conducted, and the progress it had made, and appointed Dr. Field to escort the President-elect to the chair.

Dr. McLean, on taking the chair, expressed the gratification it gave him to assume that office, and expressed the hope that the Society would make its influence still more felt.

Dr. Hopkins vacated the Secretary's chair, and Coates took his place.

It was moved by Dr. Robertson, and seconded that the first order of the business be the reading of the papers, with their discussion, and the routine business to follow ; laid on the table till next meeting.

Dr. Robertson then read his paper on "Granular Dermititis," the discussion of which was postponed till next meeting.

Dr. Field volunteered to read a paper at the next meeting on "Mastication and Digestion."

Moved and seconded that the Society adjourn—Carried.

W. J. Coates, D.V.S.,
Secretary.

OPENING OF THE ONTARIO VETERINARY COLLEGE.

The Ontario Veterinary College opened its 16th session on October 30th. The opening lecture was delivered by Professor Smith, who congratulated the large gathering of students on the good progress they had made during the past winter. If only the same diligence and energy continue to characterize them in the future as it has done in the past, their future success is undoubted.

He impressed upon them the necessity of diligence and perseverence, expressing the opinion that mere lengthened period of study will never make a successful practitioner.

In the course of his remarks the Professor referred to his extended visit this summer to the colleges of the Old World, and could truthfully assure the students of this college that in point of appliances we were not behind some of the most successful colleges of Europe. The progress of a student, however, depends as much on his own individual exertion, as on the advantages a good institution may afford him, and judging by the eminent success which has crowned the graduates of Toronto in past years, we may confidently look forward to still greater success in the case of the large number of students now gathered together.

The prospects for the session are very encouraging. Of our many students attending, a large number are from the United States. Many more intend entering in January. Those now here are applying themselves with diligence to the work of the session. In addition to the regular sessional work, a students' society for mutual improvement meets once a week. The first meeting for the session was held on Tuesday, November 5, and was largely attended. A report of the proceedings is enclosed. In this connection it may be stated that at some future meeting the president of the society, Dr. Smith, will give to the members an account of his tour of inspection among the colleges of Europe, made during the past summer.

HUMAN AND VETERINARY SCIENCE.

FROM THE MEDICAL RECORD, SEPTEMBER 25, 1875.

UNSUCCESSFUL PRACTITIONERS.

DEAR SIR:—To enter into the medical profession with brilliant hopes, given by good and thorough education, with much enthusiasm, patience, and perseverence, the whole backed up by a few thousand dollars, and meet with the disappointments that "Diploma" has had in practice, you must admit is more than sufficient to excuse his long letter with its series of complaints. He may console himself in thinking that he is probably not the only one whose hopes have been thus deceived, as no doubt the number of physicians exceed by a great amount the requirements of our population. But if such is the case, he may ask, What is he to do? Medicine he likes; study he enjoys; and he hates to give up the medical profession, for which he has already done so much. I will say to him, then, there is a sister branch of medicine which is almost entirely overlooked in this country—which counts but very few amongst its regular members—whose interest is not less than the one he belongs to—whose scientific connections are equal to it—whose influences are no less beneficial (though in a different point of view), and whose financial rewards will, I have no doubt, be satisfactory to the most sanguine; in other words, let "Diploma" and his like unfortunate confrères give attention to Comparative Medicine, to *Veterinary Medicine;* let him become a scientific, graduated veterinarian, and I feel certain that in a very short time he will write you a different letter from that which was published in the last number of *The Record.*

Yours truly,

M. D. V. S.

FROM THE MEDICAL RECORD, OCTOBER 16, 1875.

SUCCESSFUL PRACTITIONERS.

MR. EDITOR:—I have been much amused, and I hope edified, by the perusal of the letters of your correspondents "Diploma"

and "Success," but I was totally unprepared for such a shock as I received upon reading the communication of M. D. V. S. Even now, I can scarcely believe that it is not a huge joke, perpetrated by some quizzical *successful* practitioner. There was a time, sir, when it was deemed an honor to belong to a learned profession—when a degree in divinity, law or physic conferred dignity upon a man; but O tempora! O mores! how have the professions fallen from their high estate. Quackery abounds in all of them, but the temples of Æsculapius have been most befouled by his priests.

Under the pretext of ministering to the public weal, we have advertising in its most specious forms. We find dispensaries, private and municipal, parading their special advantages, thereby cheapening physic, and indirectly calling attention to the superior qualifications of their medical staffs. We have medical bath houses, mineral springs of all kinds, with "medical directors" or superintendents in charge; "homes for invalids," "private hospitals," and "retreats" of all sorts kept by medical boarding-house keepers, who board, lodge and physic their patients for a consideration. Then we have medico-chirurgical *tradesmen* or *mechanics*, under which heading may be classed the makers of artificial legs, braces, abdominal supporters, etc., who flaunt their easily acquired M.D. in every public print, and trade under the grandiloquent titles of orthopædic or mechanical surgeons, electricians, etc., etc. Passing by (with due reverence) the female doctors (why not doctresses?), we come to the dentists—always a most useful but humble class—whose use of the absurd degree "D.D.S." has played sad havoc with that ancient and reverend title Divinitatis Doctor. And here let me ask why the cuppers, leechers, barbers and nurses are left without a degree? We have already Tennessee "Doctors of Pharmacy" to confuse with the Ph. D.'s; and to cap the climax, we are to have doctors of veterinary medicine, "*a sister branch*" of our divine art, as your correspondent, M. D. V. S., most facetiously calls it.

Heaven help the profession of physic, when its disappointed members shall be obliged to become "horse doctors," even though "the financial rewards be satisfactory to the most sanguine."

Seriously, Mr. Editor, did your correspondent M. D. V. S. intend to insult the profession?

E. N. R. O. B. E. L. C.

Portsmouth, N. H., 28th September, 1875.

HARFORD COUNTY (MD.) MEDICAL SOCIETY.

Pursuant to adjournment, the regular meeting of the Medical Society of Harford County was held in Churchville, on Tuesday, November 12th, 1878. The Society was called to order by the President, Dr. W. W. Hopkins.

The minutes of the last regular and special meetings were read by the Secretary and approved.

Dr. R. D. Lee, lecturer for the day, being absent, was continued as lecturer at next regular meeting.

The society ordered that "Sick Headache" be discussed by the members, in addition to the regular subject, at our next meeting.

The following resolutions were presented by Dr. W. Stump Forwood:

Resolutions in regard to the establishing of Colleges for the education of Veterinary Physicians:

Whereas, In consideration of the fact that there are so few educated *Veterinary Physicians* in our county, notwithstanding the existence in our midst of such an immense number of domestic animals, so essential to man's use and sustenance, at all times liable to require the physician's aid; therefore be it

Resolved, That we of the Medical Society of Harford county, Maryland, suggest to the American Medical Association, through our delegates at its next meeting, the propriety of taking cognizance of, and action in the premises, and respectfully advise it, in the exercise of its weighty and wide-spread influence, to recommend the establishment of Veterinary Colleges, to be conducted by strictly scientific professors; and that the Association also advise many of the young men of the country to enter this new

and ungleaned field, instead of increasing the already over-crowded ranks of the regular medical profession.

The above resolutions were ordered to be spread on the Secretary's minute book.

Dr. Forwood and others made the following remarks viz:

If a horse is sick, the village blacksmith prescribes aloes, turpentine, nitre, young chickens, Scotch snuff, new milk, and a host of other things, without knowing what for; with the result more deaths than cures. Among the multiplicity of remedies, some may do good. From the fact that the unskilled have had and still have it in their hands, it has brought the profession into disrepute. Do away with ignorance and educate the people, or rather a doctor for such cases. As the medical field is crowded, so the field in veterinary surgery is open. The practice would be more lucrative than the regular profession, for a time at least. Any persons who own stock would be willing to pay for medical attention. For many years the profession would pay well. Some would object to the respectability of the veterinary, but it is just as respectable to treat lower animals as the higher. There is no reason why it should be otherwise. Notice the great saving of money, too. I know of a fine horse, valued at $10,000, that was killed by driving a nail in the foot, when the doctor, for say $20, could have cured the animal.

It is proper here to state that it would be impossible to combine the professions. One branch or the other must suffer for want of time to attend.

The regular medical subjects being discussed at length by the members present, after partaking of a bountiful and elegant dinner, prepared by the host, Mr. Sauner, they adjourned to meet on the second Tuesday in May, 1879, at Bel Air.

H. Clay Whiteford, M.D.,
Secretary.

OBITUARY.

On the 23d of November, Mr. W. A. Murphy, V.S., practising in Cambridge, Mass., died of heart disease. Graduate of Montreal in the spring of 1877, he was recently elected a member of the United States Veterinary Medical Association. A bright and pleasant young man, upright in all his dealings, and very industrious, had his life been spared he would have been a credit to his teachers, and done honor to his profession.

American Veterinary Review,

FEBRUARY, 1879.

ORIGINAL ARTICLES.

ATROPHY OF THE PLANTAR CUSHION.

By G. Chenier. Translated by A. Liautard, M.D., V.S.

(Continued from page 370.)

3d. Can the dry condition of the horn be considered as the cause of hoof-bound ? If facts are superficially looked at, the importance of this influence seems to be evident; but if they are scrutinized without preconceived ideas, it is easy to see that there exists in it only a simple coincidence. Let us try to prove it.

At first one must remember that the layers of horn are more dense and consistent, as they are more superficial. Mr. Goyau says: " Nature has made with the same substance a soft envelope for the living tissues and a hard external covering, essential and necessary for the connections of the foot with the ground." These qualities of the horn were indeed necessary, so as to allow the hoof its double duty—hardness and consistency on the surface, to

resist the injuring action of external agents; suppleness in its deep layers, to establish a transition and avoid painful compression of living tissues. Such ought to be and such are indeed the physical properties of the horn.

If the horn is superficially more or less dry, one must not conclude that *a priori* it has lost its watery element. It may be very dry on the surface and possess all its suppleness in its deep parts. Let us add that if this circumstance is not always the same, it is due not to an hygrometric condition changed by external causes, but we believe, on the contrary, to a keratogenesis more or less abundant.

In admitting that "the element which keeps up the suppleness of the horn," had a natural tendency to evaporate, a fact which is doubtful, would it be a reason to conclude that this cause is by itself alone sufficient to bring on hoof-bound? No; for if it was so, this disease would be more common in common horses. And we know, on the contrary, that if it is frequent in some classes of horses, it is principally amongst private horses or of luxury, or in those whose hoofs are almost daily covered with greasy ointments to prevent their dessication.

What we say for hoof-bound proper, we could repeat for the symptomatic quarter-crack. In the majority of writings upon this subject, it is said that the dry condition of the horn is one of the principal causes. If such were the case, rather than to appear as in a select spot, in parts closed to the coronary band, it would first show itself near the plantar regions, where the horn is deprived of its natural varnish by external agents, by the rasp of the shoer, and where consequently it is more exposed to lose its watery element.

To prove the influence of the dryness of the horn in the production of hoof-bound, many arguments were advanced. 1st. The curative influence of a thick and damp bedding, or of one made of fine damp sand, or of damp clay, was brought forward. But this influence is easy to explain without the assistance of the influence of humidity. In those conditions the frog touches at rest, and the plantar cushion may, to a certain extent, recuperate its vitality.

2d. The hind feet were then taken as examples. It was said that the proof of the influence of the dessication of the hoof in hoof-bound, was that in the hind feet, which, instead of being like the front ones, standing on a dry bedding, remain upon a constantly damp litter, this disease was seldom seen. To this we will answer that if the front feet are more commonly affected, it is due to a special predisposing condition of the former which is inherent to their physiological functions. And, besides, we all know that the concavity of the hind feet is "often filled up with manure more or less diluted," so that the frog again is allowed to come at rest, and the plantar surface is placed in its normal condition.

The particular condition of dampness of the hind feet, however, does not exempt them from becoming hoof-bound. I know a horse which had an acute arthritis of the left hock, and three weeks after the onset of the disease the corresponding foot was very much hoof-bound. The stallion Bashi-Bazou, of the national stud farms, is so much hoof-bound behind that these feet have often been affected with quarter-cracks. M. Lafosse, in his *Veterinary Pathology*, mentions a case of hoof-bound forward and behind.

Where is the veterinarian, having several years of practice, who has not observed a fact analagous to the following: A horse is very lame on one front leg; he is put loose in a box-stall with a good bedding; the corresponding foot is placed in the same condition of dampness as the congener—we might add, as the hind feet, and still, after a month or six weeks from the appearance of the lameness, this foot has become hoof-bound, sometimes to such an extent that the internal heel overlaps the external. We must then acknowledge that the hygrometric condition of the horn has nothing to do with this diseased process, and that this deformity is due to a want of pressure at rest in the lame leg.

3d. The following facts were also taken up: When a hoof is exposed to the sun after it has been separated of all its contents by maceration, it becomes by dessication narrower in its transversal diameter; and if so contracted it is placed in water, it resumes by degrees its normal size. Here again, an illusion, or rather a wrong interpretation. We do not deny the changes

which take place in the shape and dimensions of the hoof, separated from the foot, by consecutive dessication and immersion; but if the deductions of M. Lafosse were logical, truly the best means to restore the hoof-bound foot to its normal dimensions would be by the use of daily, long foot-baths. We do not know that the hydrotherapic method has yet been successfully employed in the treatment of this disease.

We challenge the contraction *post mortem* as means of comparison, because observations and experiments made upon the cadaver have only a relative value if compared to living facts. And we are surprised that M. Lafosse, who took the phenomena to prove (?) the influence of the dessication of the horn in the production of the hoof-bound, had forgotten the wise reflections he wrote some time after: "To discover the laws of nature," said he, "one must reproduce the facts of their actions in the same condition as she presents them herself."

To resume, it is possible that the want of external dampness, may act as assistant cause, in the genesis of hoof-bound; but we will nevertheless conclude that its action has been considerably exaggerated.*

4th. What other influences were not invoked? For this disease, as for any others, every author has judged proper to have a different cause of his own? Even the mode of feeding has been made use of. We find in some of our school notes, "The nature of food has a certain influence in the development of hoof-bound. It has been noticed that animals fed exclusively on dry food are more exposed to it than those who were fed on grass. The influence of grass is manifest upon all tissues. It softens the hoof. This may be the reason why it is more common in south bred animals, who are mostly fed on dry food." Again, M. Lafosse says: "Grass, in the stable, helps hoof-bound animals, and sometimes cures them. On the contrary, a dry, rich food, oats, predispose the feet to contract and stimulate hoof-bound."

The other causes, such as the influence of emigration, of warm

* If hoof-bound was the effect of a natural tendency of the wall to contraction, this would be more common on the thickest side, the external; and generally it is the contrary which happens.

shoeing, of excessive fitting of the shoes, of high actions, &c., are of little importance, and will be mentioned only for order.

5th. But that which for many, has contributed to keep the idea of primordiality of the contraction of the foot, is the lameness which follows it. It has been so much believed that in hoof-bound, the lameness was due to the pressure of the intra horny tissues, and specially of the fibro-elastic apparatus of the foot, that the name of the disease is made out from it.* If, however, the lameness was due to the compression of the intra horny tissues, this lameness ought to increase instead of diminishing by exercise; as it is then that the blood flows in greater quantity.

Again, it is not illogical to admit that the pain and consequently the lameness may exist without pressure of the living tissues. Besides the changes of connections that the atrophied plantar cushion brings on amongst the organs situated in the posterior region of the hoof, especially if the contraction is more marked on one side, the internal, as generally the case, this organ becomes more dense, more compact, more tenacious, almost entirely fibrous, and, as says M. Bouley, it is no longer susceptible to perform its physiological functions. Becoming fibrous, it loses its suppleness, and becomes, therefore, unfit for the office of pad for amortizement; its connections with the velvety tissue are then more sensitive, more painful; its secretion is altered, diminished; hence the atrophy of the frog.

The terminal expansion of the perforans resting no longer upon an elastic pad, cannot any more receive the pressure of the navicular bone, without manifest pain; it is for this reason that the lame leg is carried forward as much as possible to relieve itself. Coming out of the stable, the animal hesitates, advances with short paces, straightens the phalangeal axis, to throw the rest, as much as possible, upon the os pedis. It is only when repeated pressures, have, so to say, removed the sensibility of the painful tissues, and especially of the plantar aponeurosis, that the lameness diminishes and sometimes even disappears. Such is the animal chafed by the collar: at first he hesitates, but soon warming

* Encastelure, from *in a castellum*.

up, the local pain diminishes and soon disappears, and the pressure on the collar is then made as if there was no chafing underneath.

6th. The opinion that the best way to cure this disease was the use of the *Desencasteleur*,* has also been the means to give strength to the theory of the coercion of the intra horny tissues. Personally, we never have had recourse to this operation, and therefore are unable to speak knowingly about it. If, however, we believe the reports of others, they are far from being marvelous. Many authors dislike it. M. Goyau says: "The artificial dilation of the foot is now fashionable. This organ, which for years had by degrees become narrow, atrophied, is now dilated in a few months, and by violent means repulsive to nature. It is often followed by lacerations which give rise to severe lameness. Often the results obtained artificially are only temporary; left to itself the foot soon returns to the narrow condition as quick as it was dilated—this state of atrophy being now its normal condition." If such are the effects of what has been called "the first discovery of modern surgery," they are not brilliant.

It is true that examples have been given which seemed to prove the efficacy of this mechanical dilatation (opening of the heels). But are they truly due to the opening by force of the heels. Could not other influences produce them? Could not the lesion produced by the separation of the horns from the living tissues have produced a greater flow of blood, giving rise to an increased vitality in the plantar cushion? No matter, we are not disposed to believe in this curative treatment, as we have not seen it successful except in the hands of few *privilegiés*.

Even some of its partisans notice its failures. Speaking of the operation by Jarrier's mode, M. Bouley says: "Often, when the instrument has been used with a great deal of care, the animals seem not to suffer; even in some cases their gait is freer. But it sometimes happens that they suffer excessively, and become very lame." Of the same operation, M. Lafosse says: "The soreness or pain produced by this method is manifest immediately after the animal is shod, or after a short walk. It

* An instrument to produce the dilatation of the foot by force.

subsides in a few hours unless it manifests itself by a very severe lameness.

If hoof-hound was merely a shutting up of the sensible tissues of the foot by the contractions of the wall, it would seem that relief would follow the slightest dilatation. But it is not so, and even more, this may be followed by severe lameness.

The immediate appearance of the lameness, or its increased state after artificial dilatation, is not surprising. Intimately united to the sub horny tissues, the wall cannot be separated from them without tearing, laceration of soft tissues or separation of the laminæ.

Let me also say that often the contraction is unilateral, and that by the use of the *desencasteleur*, both heels, the diseased as well as the healthy, are open. Is not that sufficient to show the irrationality of this therapeutic ?

To resume, if by the mechanical dilatation, a few satisfactory results were obtained, seen by credulous eyes, it is certain that the deceptions outnumber them greatly. It is not surprising that, starting from a false part, negative results or failure were reached. To restitute to the foot, as much as possible, its normal conditions of rest, such is the unique object to be obtained when treating hoof-bound. And if by this means satisfactory permanent results are reached, our opinion upon the nature of the atrophy of the plantar cushions is fully confirmed.

In looking over the dissertations of many veterinary authors upon this subject of hoof-bound, we see that generally they have come to the conclusion that the therapeutic mode likely to bring the most favorable results was to palce the animal in such condition that the frog could participate to the pressure at rest. See what M. Goyau says after speaking of the forced dilatation : " To cure contracted feet, other means are more efficacious. Some are imitations of nature. A long sojourn in a marshy ground, or in a box stall with damp floor, is always beneficial, when first the foot has been well pared down. The results are serious, quick and lasting ; but the horse is laid up long, and cannot be used. Work on soft ground, with a light shoe, allow-

ing the contact of the foot with the damp ground, gives also very favorable results."

M. Weber writes: "When I treat contraction of both heels I have the foot well pared, the heels and barres lowered away, and the frog remaining perfectly intact. I make a fissure on the wall at the outer and inner toe, and another between this and the heel at equal distance. I put on a bar shoe, and arrange everything *to have it resting upon the frog.* When this organ is well developed, it is an easy thing to do; but if it is atrophied, I add to the bar of the shoe pieces of leather. * * * It is important to have the animal do slow work. * * * *"

M. Meguin, speaking of the advantages of the Charlier's shoe, which more than any other "allows to the foot all its integrity, specially in its inferior and posterior parts," insists upon the excellent results obtained by the use of the short branch shoe. "* * * * It is the best means at our disposition to treat contraction of the feet. Thus the heels and frog, left entire, and brought in contact with the ground, regain by exercise, by a rational gymnastic, their strength and their size." * * *

M. Lafosse says, that if the unilateral shoe of Turner "has given some good results, it is only because its author recommended the conservation of the frog and of the bars so as to keep them strong and resisting."

We have obtained numerous cures by throwing upon the frog, through the medium of the bar shoe alone or combined with gutta-percha, in the treatment of contraction, simple or complicated with quarter-crack, corn, &c., and our results in treating hoof-bound, well developed, have so far proved very satisfactory.

To resume once more, we will say that the plantar cushion becomes atrophied when it ceases to receive the entire sum of the pressions it receives in a physiological condition, and that the atrophy has for direct and logical consequence, the contraction of the corresponding regions of the wall, the change of the direction of the branches of the sole and of the atrophy of the frog—all lesions which together constitute what is called hoof-bound (encastelure).

(*To be continued*).

A NATIONAL BOARD OF HEALTH.

By F. S. Billings, M.V., of Boston, Mass.

We have been for a long time at work on a series of papers which it is intended to betitle "The Sick Man and How to Cure Him," or the medical institutions of the United States critically considered; the request of a friend, however, to write something with reference to a "National Board of Health" necessitates that the material on hand for such a subject be moulded together in rather a hasty form, yet we trust we have in the following pages touched on subjects enough to at least give others subjects of attack and consideration, for it is only by much interchange of thought and experience that we can arrive at results liable to be of lasting benefit to the nation. That we need a National Board of Health is self-evident, and it will also be self-evident that in so short a paper as the following the work of the same, its organization, etc., can only be very cursorily treated. For in a National Board of Health must be organization, regulation, reformation and incentive. No good work can come to pass except as the result of enduring organized effort. Many of our States are still without effective Boards of Health, and in only one—Massachusetts—have we anything like legal medical officers; but even in that State their duties are too limited, being that of replacing that useless inheritance from England, the Coronor. This is an immense advance, and one which should be followed at the earliest possible moment in every other State; it simplifies and renders the work much more effective. Centralized, *i. e.*, concentrated effort, is always better than isolated, sporodic endeavor. To this end it is necessary that the whole country becomes subjected to one code of hygienic law, suitable to the general needs, while in every State, county, town or city, such special laws must be made, and one made in general, suitable to the local evils; yet these special laws and regulations should always bear a proper relation to the general. It is the drafting of the latter which will devolve

more particularly on the National Board. Once having properly drafted laws and regulations, the next thing is their execution; this will be the *regulative* work of the National Board, but this word covers an immense deal of territory. To regulation the first essential is properly educated regulators—by that we mean sub-boards and sub-officers. In this regard we have yet to form in our country an entirely new, yes, two new police organizations, both in connection with hygiene, the one medical, the other veterinary. The latter we will not at present discuss. One of the best suggestions in the memorial in question, is that the health officers shall be subjected to an appropriate examination. In this regard there must be a very sharp distinction between the technical health officer, an M.D., and the executive police. It will mark a grand day in the progress of American medicine when in each State we have the requisite number of competently educated "Kreis-physici," who shall be men, as in Germany, passing especial examinations in forensic medicine, and especially with reference to the invasion's-diseases. Such positions should be the point of ambition towards which our rising men should look. These positions should be worth, according to locality and responsibility, the sum of $1,000 to $3,000 each, said sum to be paid in part, to be fixed by law, by the State, and in part by the locality in question. Such men, as in Germany, should also be allowed to practice, but if in given cases the duties were so arduous that no time could be given to practice, except at the neglect of more important public work, then, in such cases, the official M.D. should receive pay from the State and local treasury combined, equal to an income derived by the best average practitioners in same locality. One absolute qualification which all such men must have, or they are useless, is, that they be at home in foreign medical literature, and still more absolutely "au fait" in all methods of pathological and ætiological experiment. It should be positively demanded, and introduced in an examination, that such officers be "gervaudt" in the various methods of fungi-culture, and able to diagnosticate the various microscopic fungi now playing such a hypothetic role in the genetic theories with reference to the "Invasion's Kraukheiten." Another very essential qualification such

men should have is the knowledge of the actual working of hygienic boards in other countries. We should therefore have a National Board of Health in connection with State boards, which should be in connection with city and county boards, which should be in connection with the local officers; in no case, except where a mere statistician was needed, should a man fill such positions who was not gervaudt in path-anatomy, and full of the spirit of original investigation.

The National Board of Health must be *reformative*, because the entire system of medical education by us is on the wrong basis. First, all our schools or institutions of education are the result of private effort, either connected with, or independent of any responsible institution of education. According to Mr. J. S. Billings, in "A Century of American Medicine," we had in 1876, *fifty-nine medical schools in active operation. I do not hesitate to say that at least fifty of the same are in no way suited to the demands of the times, and that no one of them is regulated by the State as it should be. In no State should there be more than one medical school, which should be under the control of the State Board of Health.* How that board should be elected will appear presently, yet we find in Kentucky four such schools, in Maryland three, in Massachusetts, "Gott sei Dank," only *one*, in New York seven, in Ohio, Ye Gods! six, in the District of Columbia, "worse and worser," three; the story is indeed sad. A very striking example of the absurd ignorance of our legislators on this very important subject is given by the State of New York, in reference to a collateral branch of medical education. It seems in this State, and probably every other, that any body of men can obtain a charter for organizing a school for medical education, under a general law for the organization of charitable institutions, *lunatic asylums*, and institutions for general education; under an older law, a specified sum of money must be raised, $50,000 I think, to legalize such an organization, but this proviso is nullified by the elasticity of the Act of Assembly of later date. In neither regulation do we find the State, that is our *representatives*, displaying any knowledge whatever of their responsibilities in this regard, nor do we find a single word restricting or regulating the *standard*

of education in institutions they so loosely charter. We do not find any Board of Investigation, the duty of which is to examine into the character and qualifications of the teachers in such an institution. We do not find the State equal to its duties, and guaranteeing to the people qualified men whom they can trust and rely upon in the days of trial and affliction. On the contrary, we find the State of New York chartering or allowing to reorganize—under what right an old charter can be taken up by an entirely new body of men the writer could never understand—a defunct institution under the title of the "New York Veterinary College," with authority to grant the title "Veterinary Surgeon" to its graduates. *We find such title given to a person after only six months' study: we find the wisdom of our solons, the responsibility of the State Fathers of the State of New York, exemplified in chartering an institution for teaching and giving certificates of qualification, with one of its leading men branded before the entire country as a swindler, as a liar, as a misrepresenter of every principle which renders the science and practice of medicine honorable.* For the proof of the truth of these assertions, see Veterinary Journal, London, vol. 7, pp. 210, 212, under the headings "Spurious Titles," "Borrowed Plumes;" see further the numerous articles in the *Turf, Field and Farm*, New York, for the last six months with reference to the same matter; see further, *Hospital Gazette*, New York, March 15, 1878, article entitled "New York College of Veterinary Surgeons," p. 128, and read the evidence of the disgraceful ignorance with which we charter or incorporate institutions for medical education in the United States of America. It may be said by other ignorant persons, that that is only in reference to an institution for the education of "horse doctors," to which we answer, that under existing circumstances the same is equally possible in reference to institutions for educating "human doctors." As to the usual slur with reference to "horse doctors," we personally throw the gauntlet in the competitive lists of the medical profession in the United States, that we will do as good work, as scientific work, as original work, as the very best of them or die in the attempt, and that we have an education second to none of them, considering the length of time which we have

studied. We have endeavored to show that the work of the National Board of Health must be *reformative*, and we have endeavored to show where the reform must begin. We cannot have such men as are absolutely indispensible to our needs, under our present system of education in our medical schools. The work of reform cannot be done in a day—it will take years; but the first mighty step toward progress must be a National Board of Health and State Boards in every State; for that we have men enough. The next necessary step is to have the National Board, or delegates from each State Board, fix one standard of medical examination for the medical schools of the entire land, so that the people in every State may feel sure of having men of at least something approximating a substantial education. These regulations should be most earnestly recommended by the State Boards to the Legislatures of their respective States, and the entire medical profession in each State should, by active discussion and advocacy in the daily papers, educate the people up to this absolutely necessary standpoint.

The State Boards of Health should not be appointed by the Governor of each State, but by election by the medical society of each State, until such a time as in each State, an organized body of highly educated medical officers is found, when the members of the State Boards should be elected from the same, by the same, and hold *office* until sixty years old, if well and able bodied, and should be handsomely paid. Any member of the State Board found unqualified, should be dismissed by the vote of the majority of the Board. The plan now offered for the naming of the National Board is good enough, but in the future the same should be elected by delegates from the State Boards, and the numbers of the National Board should be arranged according to certain, to be yet constituted, electoral districts; for instance, while each New England State should send a delegate to elect a member of the National Board, the entire New England States should have but one member in the same; the Pacific Coast one, and the West and Middle States divided up correspondingly. These positions must not be political, and the holders must be named until sixty years old, or to be retired on pensions on becoming used up by work

before that period. In future the army and navy should attend their own business, or form a separate branch. These offices should be eminently civil, and the point of ambition to stimulate our best young men. We have said above that the State Board of Health should constitute the Examining Medical Board in each State, and that the standard medical examination must be the same in each State, and we intended also to have said that the period of complete study must extend over four years in the schools. All schools in any State, not able to compete with these terms, should be closed by law within a certain time, and the State Legislatures of each State having more than one school should take measures for centralizing the education in one, letting the positions for teachers *be competitive* before a committee of medical men for the time named by the Governor, or before the Board of Health, where such exists, or before a committee, named by the State Medical Association at the request of the Governor. When this is done, the State should step in and take means to pay each teacher at least $5,000 per year, and each first assistant $3,000, and the tuition should be *free* to each student having a fixed preparatory education, which should also be as near the same as possible in each State; but we would not have the education absolutely *free;* we would rather see it fixed at a certain price per year, say $100, and the amount paid in for the four years returned to those students coming out successively at the end of the same. With reference to the present funds, they could still be used as designated by the donors, but one use at least should be, offering study in Europe for at least two years, as a prize to a certain number of students from each graduating class, the same to be elected by vote of the Teach-collegium, with especial reference to minds capable of original scientific work. In each State the certificate of examination should be given by the State Board of Health, and a record kept of the name, age, etc., of each graduate. On removal to another State, each practitioner should receive from the Secretary of his respective State Board an appropriate certificate of date of graduation, duration of practice, and the same should be filed with the Secretary of the State Board of the State into which said person had moved, before being

permitted to practice. Foreigners and Americans educated abroad should be compelled to file with the Secretary of the State Board of Health an attested copy of their certificate of graduation, on which, on the approval of the State Board, they should receive a certificate of permission to practice; but if the foreign institution was not such as to guarantee the quality of the education received by said person, such should be by law required to pass the American National examination or to study in the school of said State until able to pass such, before being allowed to practice. The names of all such as will graduate, and the names and addresses of all "official mediciners" should be published in a State organ for public health and forensic medicine to be given out by the Board of Health and Medical School Faculty in each State. The practice of medicine by non-qualified men under the publicly advertised name of "Doctor or Dr.," should be punished by not less than five years imprisonment and hard labor and $500 fine; for we look upon such men as little better than chronic murderers. We cannot prevent the practice, but we must prevent the misrepresentation.

It is hereby necessary to speak of the *incitive work* of a National Board of Health, after all we have said, yet aside from the original work to be expected from its members in cases of necessity, will be as said, the stimulating desire to become a member of it; for the position should be one of the highest honor; and further, it will be the duty of the Board to offer prizes of no mean amount for original researches with reference to specific diseases, and in this way be of much moral benefit to the country. In one word, the duty of the Board is mainly to our mind, to stimulate and regulate the entire hygienic system of the country, and this includes the entire educational and practical system of medicine.

Much stress is laid by most people on the value of statistics with reference to infectious invasions; we think such collections have but very little value; whether ten men or ten thousand die of a specific invasion is to me scientifically speaking—"ganz egal," that is, the same thing; for ourself the point is, we have a course of disease existing in certain atmospheric, telluric or climatic conditions by which we are surrounded, and our work

must be untiring until we find the *raison d' etre*, and, if possible, means to prevent the same; it should never be forgotton that we may often finds means of prevention, when we cannot isolate as a specific element the true cause. See variola—" small-pox." These accumulative statistics seem to shock the people and help us to attain means for their study and prevention, but they are of little comparative value with reference to ontogenetic invasions, because of the very little attention which collateral circumstances and influences receive at such times, from otherwise careful and competent observers; hence it is that a Board of Health, with authority to detail one of its members or several thoroughly competent men to go to a named locality and study the genesis of a named invasion, and another party to study and experiment on its treatment, may do work of untold value to the nation, because in the one case the persons at work have nothing to do with deaths taking place around them, and in the other can bend all their energies to the treatment of the same; the one party to prevent the disease generating, the other to stop its course after having generated. In both cases the work would be organized, not spontaneous.

There is another form of statistics, the careful collection of which would send a thrill of horror over the human family, and it is from this form which we may in the distant future expect very valuable results; but to obtain them we need far better practitioners, much less unprejudiced thinkers, than we now have in the medical profession. *We allude to statistics with regard to the preventible diseases of life; the diseases due to ignorance, not only on the part of the diseased but of the practitioner as well; an ignorance of duty with reference to the latter, for the medical adviser who treats only is only fit for confinement among idiots. We allude to the diseases due to the ignorance of the people in the employment of empirics, and still further to the still more ignorant American craze, the use of those disgraces of our civilization, legalized patent life destroyers, discoveries of the devil and his agents—patent medicines.* Here is a crying evil to which the National Board of Health should give its urgent attention. In fact no medicines should be patented at all, nor should bottled

medicines be allowed to be sold without a register of their contents with the National Board of Health, and only at the order of a regular legalized practitioner. (They are generally stolen prescriptions which an intelligent practitioner gave for specific purposes and which unprincipled men generalize as "cure-alls."). The sale of patent nostrums to be taken internally should be regulated by law. But we will not allude further to this subject as it is our intention to devote a special paper to it in the not distant future.

As said, it is statistics in reference to the prevalence and cause of the every day diseases which we want, and not the occasional. *Phthisis consummation kills more individuals in ten years than any invasion of the present day is likely to do. What plays the chief role in the genesis of this accursed pest? Ignorance! Stupidity! Blindness! On whom rests the blame? Unhesitatingly we answer, the medical profession! No one has yet entered upon a crusade against this fell destroyer, which is spreading and dispersing its devastating germs over the nations of the world. No one writes for the people, that hereditariness plays a great genetic role with reference to the same.* We forget that the sins of the fathers are visited upon the children for generations. Who, of the medical profession lifts up his voice and tells the people, *consumptives dare not inter-marry. Aye! dare not marry!* Ye fools, who shall warn you of the wrath to come? The medical profession ever sets an example of their own incapacity, or else why so many of their members with consumptive wives and children? Why study medicine unless to think? Unless to see the truth? *Can you think, gentlemen?* We scarcely believe it Blind, blind! Education! Where have we heard the word? Have we dreamed that such a thing existed? Ignorance exists, *to think* the evidence of education is almost a myth. Perhaps it mav be found among the lost arts. *What right have we to damn our children to a longer or shorter time in a living hell of misery and pain? The cure is before us, consumptives, descendents of consumptive families dare not intermarry.* We are not at all blind to the infectious nature of *tuberculosis*, as may be seen in the future, but that is another side of the question. *How do the apostolic standard-bearers de*

port themselves on this question? Have they entered an intelligent protest against this accursed ignorance? No! no! they out Herod Herod. For the gratification of their lustfulness, they are perfectly willing to kindle consumptive fires in the bodies of their wife and children. Ministers with worn out wives, and large families dying early deaths, are more the rule than the exception. The writer is no enemy of the church. She can be of immense benefit when she knows enough to attend to the soul of to-day and let the morrow take care of itself; "Sufficient unto the day is the evil thereof," said the noble Jesus. Morals! Morals! Yes, Church morals! Society morals! Who will be the Apostle of physiological morals? Syphilis is another kindred child to Phthisis, aye, plays a part in the genesis of the fell destroyer. Yet who absolutely forbids such people to marry? Marry! "Oh, yes" says the intelligent doctor, "perfectly cured, oh, yes;" and the child produced not only brands the medical adviser a liar, a stupid and irresponsible ignoramus, but publishes the father's "cured" (?) condition to the world. Verily the sins of the fathers are manifested in their children.

After we have gathered these numerical statistics, still another form of no secondary interest demands attention; it is not enough to know the number of deaths resulting over a country from a number of given diseases. We do absolutely nothing except to establish a percentage each year with such figures. To complete the work, it is necessary that all natural influences should be most carefully observed by competent observers. We must have accurate reports with reference to the stand of ground-water all over the country, and seek to accurately define the relations of the same to typhus and typhoid diseases; we must know the influences exerted on the outbreak and extension of diseases by the water courses and prevailing winds; we must know what diseases prevail in the valleys, and what do not prevail on the highlands; we must know the influences exerted on the diseases of people living on high and exposed table lands, as well as the inhabitants of wooded districts; we must know accurately the influence exerted by temperature changes, by dry and wet seasons; we must know the influences animals exert on man, and *vice versa*. And when all this

is collected, the National Board of Health—we think it will finally develop into a department—should give out once in every ten years, geographical maps of the extension of diseases in the United States, with tests, but such should not be limited to invasive diseases, but should embrace every disease, except induced, and it might be well to embrace them also, such as syphilis, in the same. We wish to say one word about the proposed pay, $5,000 per year. It is evident the work requires the ablest men the country can produce, men who could earn from $20,000 to $30,000 per year in practicing. It is an insult to offer such men $5,000 a year to give their entire energies to the people for their lives; $7,500 and retiring on full pension when sixty years old, or useless from overwork, is little enough, and only by such a course can we expect good men. The people do not want the positions filled by worn out millionaires for honor alone. Yes, we need a board of national hygiene, but let it not be composed of antiquated fungosities, but of men in the aggressive, not the defensive years of life. Let it be composed of men alive in the science of to-day, not buried in the dream of the past. The good time is now, is before us. "The good old days of yore," do not for us exist; they existed for the men *living*, not dying in their *perfection*. The *possible* is ever before us, not behind. It must be composed of *men* equal to the emergencies of our day and country, and blessed shall we be, if one now among them answers to the same.

In carefully considering the memorial in question, we were not surprised at observing an omission, which all things considered, is excusable, but which, nevertheless, neglects one of the most important assistants, aye, in many ways, the most important factor in reference to questions of national hygiene. We allude to the fact, that we find no veterinarian is thought necessary to such a Board. It certainly must be known to the estimable drafters of said memorial, that some of the weightiest prophylactic and hygienic questions of the day are entirely out of their line of work, can in fact only be rightly considered and investigated at the hands of scientifically educated veterinarii. One need but allude to the terribly fascinating interest, for the pathological experimentalist and ætiologist, attached to the question of "*Tuberculotic*

Infection" raised by the lamented Gerlach—the Virchow of veterinary medicine—to the very close relations existing between anthax and authracoid diseases of animal life; to the innumerable dangers of septic infection, to which we are exposed from untimely slaughtered flesh; to the immense losses which the nation suffers from the various animal epi and enzootics. One need but allude to the yet but little appreciated truth in pathology, that the more one knows in general, of the processes and phenomena of disease, the better can he judge in a special case. Comparative pathology is not yet truly developed, aye scarcely begun. *Numerous mistaken writers have spoken of veterinary pathology as comparative. We have veterinary and human pathology. The union of both, and comparison of the results of both forms of investigation is true comparative pathology, all authorities to the contrary.* The drafters of this memorial undoubtedly entirely overlooked this matter, yet we think they are mistaken. We are fully aware of the difficulties the nation would find, in searching for a man equal to the emergency. We are perfectly aware that if the duties of the other members of said Board are to be onorous in the extreme, those of the veterinarius will be such as to make every one who realizes them, tremble for the life and health of the man on whom such an honor is conferred. We will say at once, the man can be found, and a veterinarian at that. We will now say what that man must absolutely know and do, or history will pronounce him a failure. First, he must be a gentleman; further, he must be well educated in the rise and progress of medical art and science, and of the difficulties which have been overcome. He must be at home in the history of his own profession in every land, and he must be able to exert a healthy judgment over the stand of veterinary medicine in those lands. He must know why it is that his profession has been always in the back-ground, why in most lands it is still holding religiously on to the skirts of the last century. He must be an American in the true sense of the term. He must be impregnated with the scientific spirit of the day, and with fore-seeing ability suiting him to mould things for the future. He must be at home with the various forms of American life, and have power to mould these forms for

the good of the whole. He must be a gentleman of culture, a philosopher, as well as a mere technicalist. He must be acquainted with the entire veterinary police laws and systems of the world, and, if possible, have lived more or less in them. He must have an organisative ability of the highest stamp, for he has almost single handed to lay the foundation of a veterinary educational and police system, and woe betide him if he fails. *Woe betide the man, who in the face of the results of a "century of American medicine," in the face of the lessons it teaches, in the face of the results of the veterinary educational system of Britain, in the face of the emphatic testimony in favor of one or two national veterinary institutions of education as exemplified by France and Germany—woe unto the man, who, in the face of these testimonies, would advocate either private or State institutions for veterinary education. One standard of education, one diploma for the nation, one school, until the needs of the country absolutely demand two, when both should be under the same system. One grand veterinary educational investigatory, prophylactic, practical and police system is what the nation wants, and he who advocates any other form is not the friend of his country, is no true student of history, is no true scientist. We must have a man to fill this position whose work and ways testify to his ambition, to his willingness to count life, family, friends, as nothing, in his desire for the furtherance of his country and his profession. We must have a man with trustworthy testimonials of his ability for this mighty work. We must have a man thoroughly at home in veterinary pathological anatomy, and not ignorant of human pathology; yes, we should say, so well at home in the latter as not to fall into any of the "identical fallacies" so absurdly sought after by veterinary writers of the present day, who hope thereby to bolster up their profession. We must have a man in the flowery days of life, so that we may hope to see him live to place this grand national necessity on a solid, scientific and adamantine basis.* If we can find a man personally acquainted with the leading men of Europe, so much the better; we must have one able to read at least German and French, for it will be an absolute necessity to receive all the veterinary enactments of these lands. Germany has two veterinary

councellors upon her "Reichs Gesundheit-Amt," State Board of Health, and one at least is one of its most valuable members. Germany is about issuing a set of veterinary police laws for the entire nation, in the place of those now existing, which were issued by the respective governments. Veterinary medicine and police differ much from human; everything assumes a more *general form;* her laws must be more general, because the common danger is greater; animals infested by invasive diseases are easily subjects of transport, while the sick man gladly stays at home. The entire community has an interest in all matters pertaining to veterinary medicines, while in relation to human, it is a different interest, there is no comparison in this regard; veterinary medicine holds in its hands the keys to a large number of human diseases, and on the other side she holds at her command an immense part of the national wealth.

We have indicated that the Medical School of each State should be regulated by the State, the Examining Board to be the State Board of Health, which would also have at its disposal such institutions for the purpose of patho-ætiological experiment, conducted at their suggestion by the teachers, in which the advanced students would also participate. We would not certainly be less generous to our National Department of Hygiene, and so we propose, as we have been proposing and intend to keep on battling for, until we see its completion, that this National Board have an institution at its command, not only of the same kind, but one which is better by far adapted to perform their work, than a mere medical institution. Hence it is we propose: one National Institute for the study of veterinary and comparative pathology, for the education of men on whom the nation can rely in the study of all ætiological influences, for we believe, aye, we know, that the day will come that *Veterinarius* will be the most effective hygienic officer of the nation, when in a prophylactic point of view he will stand as far ahead of the Medicus, as the latter will be valued above him for a practical. We know of what we speak; we know of the immense advantages yet to be reaped from the exact study of comparative medicine; we know that from the nature of his profession, from the natural bias of

his mind, the cultivated veterinarius is the man on which the world will finally rely for its study of the telluric, atmospheric and climatic influences on disease-genesis. We know also that to-day the profession is not up to this point, but we are confident it will attain to it; but to do it, we must have, as said, a proper and well regulated institution for education. Hence it is that our National Health Department will eventually be an organized army of well educated men, able to combat successfully man's dread enemy—*Disease;* hence it is such a department cannot afford to despise veterinary medicine; hence it is we must have a veterinarius upon it, and a national veterinary institute controlled by the National Department of Hygiene, represented by the veterinarius, who in the, we hope, not too distant future, should be elected by the teachers of the said veterinary institute. The work of such an institute we have elsewhere discussed in papers which we hope will follow the present in this journal as well as receive notice from others.

Berlin, Prussia, Dec. 9, 1878.

EDITORIAL.

VETERINARY INSPECTORS.

Through these columns, attention has already been called to essential questions touching upon sanitary regulations in both the general and state governments, and while we are not over sanguine as to the probability of our suggestions being at this time acted upon, there can be no doubt as to the ultimate recognition of the importance of veterinary science in conjunction with this all-important subject; and sooner or later the veterinarian will find his knowledge in requisition by health boards that have not accomplished a satisfactory success, while ignoring the claims which our branch of the medical science justly makes in the interest of public health.

This question of establishing veterinary departments in all

boards of health is one of unusual importance to us at this juncture of our existence as a profession, struggling for recognition from a government that seems so apathetic in its appreciativeness of our merits, and it is with the hope that the opinions therein expressed may excite renewed interest and comment, that we publish in this number, from one of our co-laborators, a lengthy article on the organization of a Veterinary Sanitary Bureau.

The obstacles to the early accomplishment of such a success as the establishment of a bureau of this kind would be, are certainly patent to the most casual observer in our ranks who is at all acquainted with the deficient knowledge of public officers in matters pertaining to hygiene and sanitary laws; and in light of the recent experiences undergone by our professional brethren of European countries in the formation of similar institutions, we cannot conceal the grave doubts we have of an immediate realization of our hopes in this direction, for if the governments of those countries in which veterinary science is at its highest development, have for so long a time ignored its claims, how mnch less effective must be our importunities while we have yet to acknowledge the weakness of our infancy.

Lying in the seeming interspace between human and veterinary sanitary police, and linking the one to the other, is the office of *meat inspector*. When we consider that the principles of sanitary science which underlie all rules of health are alike applicable to man and beast, we cannot deny that the recognition of the importance of these principles must ever be dependent upon the individual understanding of the sanitarian, and that he will be most efficient in the performance of his duties who comprehends the most fully these laws, and readily recognizes the necessity for their employment.

It is this specially acquired intelligence which must ever pre-eminently adapt the veterinarian for the position of meat inspector, for no other can be so well fitted to detect the presence of disease in the animal intended for slaughter, or the evidences of its previous existence in the meat that is offered for sale.

It is in this position the services of the veterinary surgeon must be most potent for the preservation of human health, for

while our food supply continues to be so largely constituted of animal flesh, there exists the utmost necessity for the proper inspection of all such meats as may be offered for sale.

It is a notorious fact that where deficient inspection exists, the avarice of unprincipled dealers imposes upon the unsuspecting public, meats unfit for human food, and it was to arrest this insidious source of disease that European governments have established in their abbatoirs, slaughter-houses and meat-markets, inspectors who should at once prevent the slaughtering of unhealthy animals and the sale of diseased or spoiled meats.

To fully protect our people from the pernicious influences entailed by the consumption of flesh affected with acute inflammatory processes, infectious disease, or parasitic conditions, necessitates the employment of inspectors who possess greater qualifications than are found in the common police officers usually detailed for such duties; and, following in the footsteps of other countries, our government must eventually recognize the fact that the entire education of the veterinarian fits him to most fully compass this desirable immunity from surrounding danger, and his appointment to these official positions will be an appreciative acknowledgment by her of his unequalled importance.

VETERINARY COLLEGES.

TRANSLATED BY J. GERTH, STUDENT.

(*Continued from page* 436.)

ITALY.

Bologne. (Veterinary School.)

Milan. (High Royal School of Veterinary Medicine.) Director, Dr. L. Corvini; Professors: Dr. Johann Generali, Dr. Melchiar Guzzoni, Dr. Lanzilotti Buonsanti, Dr. Peter Pellogio, Dr. Heinrich Sertoli; Assistants: Dr. R. Demetrio, Dr. Achilles Ironchera, Jacob Bertoni, Dr. T. Negrini.

Naples. (Veterinary School.)

Pisa. (Veterinary School.)

Turin. (High Royal School of Veterinary Medicine.) Director, Cav. Dom Vallada; Professors: Cav. T. Chiapparo, Cav. Robert Bassi, Cav. Lorenz Brusaco, Cav. Ed. Perroncito, Thomas Longo; Assistants: Julius Demorchi, Anton Venuta, Jacob Pairone, Michael Gay.

AUSTRIA.

Vienna. (Royal Military Veterinary Institute.) Faculty: Director, Prof. Dr. Moritz Roell; Professors: Dr. Franz Mueller, Dr. Andreas Bruckmueller, Dr. August Armbrecht, Dr. Leop. Forster, Dr. Franz Zahn; Adjunct Professors: Maximilian von Baumgarten, Raimund Korzil; Docents: Franz Konhaeuser, Dr. Josef Bayer, Dr. Johann Coskor; Assistants: Dr. Justinian Ritt. von Froschauer, Josef Stengel, Franz Wildner; Teacher of Shoeing, Ferdinand Schueller; Inspecting Veterinarian, Ferdinand Wicher; Secretary, Ludwig Gellnick.

This Institute was founded in 1777, and opened in 1778. In 1812 it consolidated with the University of Vienna.

HUNGARY.

Budapest. (Royal Veterinary Institute.) Faculty: Director, Prof. Tormay Adalbert; Professors: Dr. Ritter Wilhelm von Zlamal, Alois v. Izabo, Dr. Franz v. Varga, Dr. Ludwig Tanhoffer, Dr. Cako Koloman; Prosector, Adalbert Nadasky: Teacher of Shoeing, Franz Kurtz.

RUSSIA.

Charkow. (Veterinary College.)

Dorpat. (Veterinary College.) Faculty: Director, Prof. Dr. Ritter F. Unterberger; Professors: Dr. A. Rosenberg, Ritter Mag. Eugen Semmer, C. Raupach; Docents: Mag. Waldemar Guttmann, Dr. Waldemar v. Knievim, Dr. Klever, Ritter Mag. Julius, P. v. Wiskowaton; Prosector, Mag. A. Semmer; Teacher of Shoeing, C. Arndt, Sr.; Assistant Teacher of Shoeing, C. Arndt, Jr.; Assistant Prosector, C. Arndt (II.); Assistants: Paul Aley, Mag. Christof Hellmann.

Smaller branches are lectured upon by the Professors, Dr.

Helming, Dr. Russow, Dr. Flor, Dr. L. Stieda, and by the Assistant Mag. Lagorio, of the Dorpat University.

This college was founded in 1848, and reorganized in 1873, at which period it received the rank of a university.

Sixty-one students are attending lectures at present.

The course of study lasts four years.

Kasan. (Veterinary College.) Faculty: Director, Prof. P. Seifmann; Professors: A. Strschedsinsky, J. Lange, K. Blumberg; Docents: E. Lehmann, J. Narvalichin, P. Svislotzky, Prof. J. Dogrel; Teacher of Shoeing, K. Kalming; Prosector, A. Grischin; Clinical Assistants: C. Holzmann, A. Roschdestwensky.

St. Petersburg. (Veterinary Department of the Academy of Medicine and Surgery.)

Warshau. (Veterinary College.)

SWEDEN AND NORWAY.

Skara. (Veterinary College.) Faculty: Director, N. E. Forssell; Professors: G. V. Hofling, C. R. Waller; Adjunct Professors: J. I. Ch. Anzelin, C. A. Wiegandt.

This college was founded by Prof. Peter Hernguist in 1774.

Stockholm. (Veterinary College.) Faculty: Professors H. Kinberg, Ernst Morell, G. Sjostedt, C. Linguist; Lecturer, C. Ericson.

This college was founded by an edict of Government in 1820.

SWITZERLAND.

Berne. (Veterinary College.) Faculty: Director, Prof. von Niederhaeusern; Professors: Buguion, Berdey, Guillebeau, Hartmann. The Professors, Dr. Arly, Schwarzenbach, Fischer, Forster and Bachmann, of the High School, lecture at the College.

This College was founded in 1805.

Zurich. (Veterinary College.) Faculty: Director, Prof. R. Zangger; Professors: Dr. Balthasar Luchsinger and Dr. Eberth; Docent, Dr. Keller; Assistants: Meier, Hirzel and Tschokke.

In Switzerland three members of the profession are at the head of the Veterinary Sanitary Police.

SPAIN.

Spain has four Veterinary Colleges, one in *Zaragoza*, one in *Cordova*, another in *Leon*, and the fourth in *Madrid*. The latter is the most eminent. Its director is Dr. José Maria Munnoz. In the capital of Spain there is but one good veterinary journal published—"La Veterineria Espannola"—edited by D. Leoncio F. Gallego in a very creditable manner. In this country veterinary science is quite undeveloped. This is principally due to its being almost entirely neglected by the government and people. The public, when animals are sick, seldom consult a qualified man, but most frequently employ an empiric. As the government is not inclined to do anything for the schools and teachers, the colleges are but poorly attended. Furthermore, every student knows that he can obtain but little practice, and that upon horse-shoeing he must depend for a living.

TURKEY.

Constantinople. (Veterinary College.)

CANADA.*

Montreal. (Veterinary College.) Faculty: Prof. D. Mc.-Eachran, F.R.C.V.S., Principal; Professors: J. W. Dawson, LL.D., R. Craik, M.D., W. Osler, M.D., O. Bruneau, V.S.; Assistant, C. C. Lyford, V.S.

Toronto. (Ontario Veterinary College.) Faculty: Prof. A. Smith, V.S., Principal; J. Thorburn, M.D., M. Barret, M.D., H. H. Croft, D.C.L., Dr. Ellis, George Buckland, Esq.; Assistant, J. T. Duncan, V.S.

* As the German author of the general notice of the Veterinary Colleges of the world has omitted the mention of the two following institutions, we have felt it our duty to add them to this translation, in full justice to these excellent schools.—[EDITOR.]

REPORTS OF CASES.

FRACTURE OF THE FIRST PHALANX.

By W. G. Schmidt, D.V.S.

The two cases reported below were quite interesting to me, and believing they may prove so to some of the readers of the Review, I beg to report them:

Case No. 1.—On the 23d of May last I was called at 1 p. m., to see a grey gelding, the property of Mr. Peter Scholl, which had been injured at the corner of Market and Broad Streets, by the passing of a wagon over the fetlock articulation. I found the animal standing on three legs, with the left fore extremity raised from the ground, and on examination, found great pain on pressure, and by manipulation obtained a distinct cepitus; diagnosis, oblique fracture of the first phalanx. Being unable to procure an ambulance, and the animal being old, I advised the owner to have it destroyed, which I believe was done.

Case No. 2.—On August 24th I was called to see a grey mare seven years old, owned by Mr. Fountain, on South Orange Avenue, which had been injured on the previous day. History—while being driven before a cart, the animal had stumbled, fallen, and the wheel of the cart had passed over the left hind leg at the fetlock. I found the animal standing in the barn yard, unable to put the injured extremity to the ground. On pressing the injured part, the patient suffered great pain, and by manipulating I obtained crepitation, and made a diagnosis of fracture of the os suffraginis.

I had the patient removed to the barn and put in slings, and after enveloping the part in oakum, applied a plaster-of-paris bandage in the usual way. On visiting my patient on the 14th of September, I found that the dressing had been slightly displaced, and partly removed it, at once reapplying it, the process of union apparently going on satisfactorily.

On the 28th of September, as the owner was averse to incurring further expense, unless there was a possibility of reunion taking

place, I removed the bandage, and on examination found that the healing process had made considerable progress, and again dressed the leg with plaster-of-paris. The patient had now begun to bear a little weight upon the injured leg.

On October 12th I removed the dressing, had the animal backed out of the stall, and walked up and down, locomotion being apparently perfect, but as a precautionary measure, she was kept in slings for another week, when she was put to daily exercise, the only indication remaining of the severe injury she had received being a slight thickening of the fetlock.

Wm. G. Schmidt, D.V.S.

Newark, N. J.

ENDOCARDITIS AND RUPTURED STOMACH.

By Theo. S. Very.

A bay horse 18 years old had been driven carefully about nine miles, and was properly cared for and put in his stall about 12 o'clock noon. Shortly afterward he was noticed to be uneasy, the owner was notified, and I was sent for. He had been ailing about two hours when I arrived at the stable, and the stable keeper had given him a dose of gin and ginger and hot water. I was told he had laid down and got up several times, had urinated freely once or twice and passed considerable manure, but had not been down for an hour. The symptoms presented were peculiar, and as nearly as I can describe them as follows :

Three o'clock.—He stood in a wide stall, was covered with two long blankets, his head was quite erect, and his respiration, which could be heard quite a distance off owing to the vibration of his nostrils during expiration, was just 100 a minute. He was wet from his head to his feet with perspiration ; his legs were uncommonly cold even above the knees and hocks ; his pulse was quite indistinct and irregular ; the oblique abdominal muscles were tense, but the illiac spaces were not distended, and he showed no tympanitis during his sickness. The visible membranes were of a natural color. While I was making the examination he got into

position and passed about a teacupfull of urine. I discovered the indications for treatment to consist of the administration of diffusible stimulants and opiates, and I gave alcohol ℥ ii, tinct opii ℥ i, in a pint of water, and repeated it at intervals of an half hour until five o'clock. Woolens wrung out in hot water were applied over the lumbar region, and the application renewed every twenty minutes.

Four o'clock.—The respiration remained about the same, except at intervals, when the noise would cease, during which he seemed easier. He had no pulse ; all the other symptoms about the same. At times his head and ears were quite erect, at others depressed, with his nose almost touching the floor. The inclination to urinate attracted my attention as a prominent symptom, but I thought then as now, that he endeavored to urinate simply from excitement. He had not laid down but had made several attempts, going down on his knees and after remaining in that position for half a minute or so, rising again.

Five o'clock.—He laid down carefully and remained with his legs all under him, making no attempt to roll or stretch out for a period of about 15 minutes. When he arose, he got up behind first, like a cow. He was apparently somewhat affected by the opium, but remained pulseless and cold as before. There was less excitability, but no weakness. Again at 5½ o'clock he laid down carefully as before, stretched his forward legs out in front of him, got partly up on his haunches, and then lowered himself down again, making a heaving motion, as if to vomit. This he repeated several times, but did not vomit; neither at any time was there any eructation of gas. I had not been in a hurry about making a diagnosis, because in many respects it looked to me to be a very unusual case. At first I feared some trouble with the heart, the exact nature of which I could not discover. Later I suspected ruptured stomach, and made this diagnosis more positively than I had the other. From the first it was easy to see that his was a hopeless case, but the vitality exhibited by the animal was unusual in my experience.

I had predicted his death to occur by 6 o'clock, but he lived until 7:30 ; then he fell down on the right side, turned his head

to the left, the incisor teeth bore heavily on the chest in the region of the heart; his respiration was labored, the cervical muscles grew lax, and thus he continued for perhaps ten minutes. Finally he stretched his nose out to the greatest limit, struggled once or twice, and was dead. The post mortem made eighteen hours after death revealed no disease of other organs than the heart and stomach.

The former looked hypertrophied, but I did not weigh it. Both ventricles contained large amounts of clotted blood. When washed, the endocardium of both ventricles was striped as if painted, with bands of ecchymosis as wide as one of the fingers, from above downward, the spaces between being of a natural color.

The valves were also blackened. Pericardium was apparently free from traces of disease.

The peritoneal covering of the stomach was torn in a direction legnthwise with the stomach for about fourteen inches. There was an aperture through the muscular coats of the stomach as large as a silver dollar, midway between the greater and lesser curvatures, and about equally distant from the orifices.

DEVELOPMENT AND PRESENT STAND OF MICROSCOPIE IN GERMANY.

By a Lady Friend of the "Review."

(*Continued from page* 227.)

Up to the present time most of the improvements in the compound microscope had been made in foreign lands, and it was owing to their introduction into Germany that the German microscope has attained its present excellence. The most considerable improvement in the compound microscope was made by Hertel in the eighteenth century. He introduced reflected light through a mirror, and changed the microscope which up to this time had been horizontal, into a vertical one.

It is a matter of surprise that twenty years should pass before these excellent improvements should come into general use. Hertel's microscope was better than any that had preceded it in

its entire mechanical arrangement; superior indeed to many that were made later. Tube movement, exact and easy; an excellent and convenient object table; a moveable plane mirror; a contrivance for opaque illumination, after the method of Lieberkuhn, and an adjustable, plain micrometer. These are the characteristics of its mechanism.

Cuff improved the compound microscope still further. In its form it was similar to that in use at the present day. From this period on, the number of microscope-makers increased. The microscope stative was also made in many different forms. We will only mention Steiner von Gleichen and Benjamin Martin, who, with others, made the first pocket microscope and the first so-called "universal microscope." Ring and Veunebruck in Berlin, Rheinthaler in Leipsic, and Burucker in Nürnberg, all imitated the Cuff microscope in a greater or less degree. In the year 1770 Brander of Augsburg made himself famous through his microscope. One of his instruments resembles in an extraordinary manner the Martin pocket microscope, the other is an imitation of the Cuff instruments. Brander first introduced a contrivance in the form of a horse-shoe, over the object table, which served to fasten the objects firmly on the table, being used in the place of the object holder with the spiral spring, which, with some modifications, is in use at the present day. Brander declared that his instruments magnified one hundred and twenty times, with a visual distance of eight inches.

In the last part of the eighteenth century the improvement in the optical portion of the compound microscope was very small.

In 1672 Sturm attempted to construct the objective out of two lenses. No one followed his example. Instead of seeking to perfect the objective, every microscope maker sought to overcome the defects of the compound microscope by perfecting the ocular.

In the place of two glasses, three, four or five were used for the ocular. Instead of bi-convex lenses, plain convex. The distance and inclination of these lenses was varied in every possible manner. Dellebarre sought to make the microscope acromatic by the use of bi-convex lenses, made from flint and crown glass. None of these efforts accomplished the desired results. A more

extensive field of vision was obtained, but the optical power of the microscope remained the same, still, lenses of greater magnitude could thereby be used in the objectives. In Germany, in the last half of the eighteenth century, microscope makers distinguished themselves by developing and perfecting the compound microscope. We cannot, however, describe the improvements here.

In 1772 Samuel Gottlieb Hoffmann, of Hanover, made microscopes which, according to Gœze, consisted of six objectives, by means of which twelve different results could be obtained, the strongest of which magnified three hundred and seventy diametres. Some years after Johann Heinrich Tiedemann constructed an objective, whose focal distance was from 2-2 millimetre. The microscope had a moveable table, worked by two screws. The adaptation was effected by means of a spring. Tiedemann's microscope was considered by Bescke the best instrument at that time existing, and was very highly prized. The bottom of the box in which the microscope was kept was used as the base of the microscope. In Germany, at the end of the past century and the beginning of the present, the following microscope makers are worthy of mention: Wagener, Elkner, Junker, and Wickert. The last two mentioned endeavored to make cheap microscopes without at the same time destroying their value and usefulness. Through these four gentlemen already mentioned the microscope was greatly improved. It is a fact worthy of mention that at this time as well as later in Nürnberg, in most manufactories the compound microscope was constructed of wood and pasteboard. In the beginning of this century the dioptric microscope, although greatly improved in its mechanism, was still in the most deplorable state of mediocrity. The simple microscope, with all its disadvantages, was used for scientific investigations. The compound microscope was looked upon simply as a plaything, and by Dilletanti it was so regarded.

We have yet to mention still another kind of microscope, called the catadioptric instrument, which was intended to remedy the already mentioned defects of the compound dioptric microscope. We shall not, however, mention these instruments further, as they could not take the place of the dioptric microscope. The

sun microscope was discovered about the year 1646 by Kirschner, in the earliest period of microscopy. A half century later it was universally known under the name of the camera obscura microscope. In the beginning of the eighteenth century Fahrenheit, who was born in Danzig, made one, which Lieberkuhn afterwards imitated. In the middle of this century the sun microscope was used generally to make drawings of microscopical objects.

G. F. Brander, Von Gleichen, and Burucher added some special mechanical contrivances. Euler improved the sun microscope to a great degree. Von Haeseler carried these improvements into actual practice. Still the sun microscope remained in the same unperfected state comparatively with the others.

III.

If we examine once more the progress of the development made in the microscope in the first period of the history of microscopy, we shall obtain without difficulty a general idea of the condition of the microscope in the last period. The microscope, in spite of all the progress made in its construction, the importance of which we do not for a moment undervalue, still remained a very imperfect instrument. For this reason microscopy could not reach any great degree of development.

Frey, in his "Hand-book of Histology," declares that Leewenhock in his work, neither sought out a scientific principle nor method. His work is rather a revelation of remarkable and extraordinary objects which the naked eye imperfectly defined—not a correct scientific result. Frey characterises truly the micrographical work of the early history of microscopy as possessing no real scientific value, although of much significance on account of single histological details evolved. In them the combination of the units to a scientific whole was utterly absent.

The superior work accomplished from 1600 to 1811 was isolated, and without any connection. Skilful hands were necessary to bring into being the true scientific microscopy.

Frey's assertion that Leewenhock's researches were discoveries of strange and remarkable things or objects. Leewenhock and all those that followed him up to the year 1811 were animated to

work in the true interest of science, it is true, and endeavored to carry on their work in a true scientific manner, but were perhaps sometimes led away by the desire to satisfy the vulgar curiosity of their time. It was not their fault that they did not bring their investigations to the development of a scientific microscopic anatomy—that is, to make microscopy an independent scientific discipline. It was the result of the imperfect instruments with which they had to work.

We shall next examine the development and progress made in the apparatus for microscopical work. We shall first consider the appliance for holding the object. It filled an ever increasing demand for a medium through which observation of microscopical objects was made easy and convenient. In order to estimate correctly the development of microscopy, we must examine the means for preserving the prépérat or the preparation, which are even so worthy of mention. We shall all notice the manner of preserving the preparation.

According to Huygens, small plates made of mica were almost exclusively used as object holders. In general the objects were fixed on with wax oı turpentine. Sometimes they were pressed between two small mica plates. These were afterwards replaced by a concave glass tablet having peculiar contrivances, by means of which they could be firmly attached to the microscope. Liquids were examined in glass tubes; living animals in a vessel which consisted of a concave and plane glass. The so-called water insect vessel was used by Leewenhock, and was later very much changed and improved.

Many microscopes, in the place of the object table, had forceps by which the objects were held fast. This arrangement was used in part until the second period of microscopy. Object holders with concave cavities were used at an early date. It is very interesting to relate that Leewenhock had an apparatus by which he examined the circulation of blood in animals.

In 1718 a very curious contrivance was brought into use for observing living fish. The subject was placed upon the object table; a lead plate was laid upon the body in such a manner that it was incapable of moving any portion of the body except the

tail. From this apparatus the brass fish-pan was made which was in use for so long a period. The first apparatus for studying the circulation of blood in the frog was constructed in the year 1744. For observation it was combined with the sun microscope, and consisted of a frame upon which the animals were fastened with strings and pins.

In 1782 Goeze discovered the compressium. He constructed two such instruments—one made of brass and a hollow capsule, with a glass bottom, within a moveable glass plate, which was fastened near the end, and capable of being extended by means of a spring.

To examine the different kinds of object holders would carry too far. We will, however, simply remark here, that as early as 1715 microscopes were made which had a rectilineal and revolving movement of the object by means of mechanical appliances. The appliances of Keppler were used to measure the object. The observer looked in the microscope with one eye, with the other upon a given scale or measure. This method was very favorable when the magnifying power of the microscope was known. Although this was not always the case, still it was a much better method than that of Leewenhock, who measured objects by comparing them with other known bodies or objects—such as a hair, a grain of sand, etc. In 1710 Prof. Theodor Ballhasar first recommended the use of the micrometer. The first micrometer, together with the seriros and Nitz micrometer, were made by Hertel. Several years later, however, they were brought into use by Benjamin Martin. In 1769 Brander made micrometers which were infinitely better in their division than those of Hertel.

In examining the instruments for preparing the objects in use in the first period of microscopy, we shall observe that objects were examined in their natural condition. Small insects were stuck on pins, or placed between two mica plates, or held fast by pincers ; these were the only objects examined, at most the wings, the feelers, or the feet. Jan. Schwammerdam made the first anatomical section. Although he was from the Netherlands, we shall look more closely at his method. He used the section table made by Samuel Mussehenbrock, a small scalpel, a delicate pair

of scissors, a lancet, a needle of a lancet shape, which was so fine that it could not be cut without the aid of a magnifying glass. It is interesting to know that Schwammerdam was the discoverer of the injection process. Although he never used forceps Schwammerdam dissected the animals after he had killed them in water.

The first forceps were made by Massenbroek after the death of Schwammerdam. It would be utterly impossible here to follow the development of each single microscope. It is enough to say that they resembled essentially in form those used at the present day, but they differed in manifold ways. The oldest instrument of this kind is in the museum at Utrecht. It is described by Harting as follows: "It is a hollow cylinder of brass, in which a small arm can be introduced; underneath is a screw for regulating the length, either longer or shorter. Above are two rims, of a swallow-tail shape, for three plates of brass with springs of one-third to six milimeter in diameter. If the part worked by the screw projected, the surface of the small plate served as a conductor for the measurer." Adams made in 1770 a construction of this kind from an improved mikrotom.

The preservation of microscopical objects is a custom as old as the microscope itself. Plates made of mica and small glass tablets were used, between which the larger insects or animals in a dry state were placed, without any preparation whatever. Soon the delicate portions of animal life were attempted. B. Hermann Boerhaave says in his biography of Schwammerdam, that the latter (Schwammerdam) cleansed the animals, then inflated them with air, and dried them. In this manner they retained their form, and could be exhibited. Sometimes he pricked the little animals with a thin needle, squeezed out all moisture, inflated them, placed them in a small glass tube and dried them in the shade, smeared them with lard oil, in which he had mixed a little rosin. In this manner he could keep the specimens many years in their natural form. The first microscopical collection was made by Leewenhock. It is not known how the animals or insects were prepared. With great certainty we can affirm that they were in a dry state. P. Hertig, whose works we have so often mentioned, gives us a

list of Leewenhock's specimens as it appeared in the auction catalogue after his death. The catalogue embraces thirty-seven animal, nineteen vegetable, and many mineral objects. Although our limited space makes it almost impossible to mention them, yet to our readers it will be interesting, as we can thereby obtain a most excellent opportunity to mark the progress microscopy has made.

The successors of Schwammerdam and Leewenhock preserved their specimens in a dry state until within the second period of the history of the microscope. In observing the progress of the development of the microscope until the year 1811, we find that real scientific microscopy did not exist in the first period of its history. We will, however, examine the auxiliaries and additional apparatus as well as the various methods for preserving the microscopical specimens.

Before we examine further the progress of the development of microscopy in Germany, we shall first describe the term microscopy as we understand it. Microscopy is the scientific theory, the making and use of the microscope, as well as by the help of these instruments to construct finer appliances which are adapted to the examination of scientific, microscopical, and natural objects. General microscopy is the theory of the manufacture aud use of the microscope. The process of development we have already described in the first period of the history of microscopy. Special microscopy is the theory of the finer construction of natural scientific objects. The term micrography has also been used, and with reason. Microscopy has, however, often been employed as a general term for both branches, although we decided long since to use the terms in their true scientific sense. We will close this treatment of the subject, as we shall give the definitions at the end of the work. We shall make use of the special terms in order to avoid all mistakes.

In the first period of its history microscopy was of very little importance, on account of the undeveloped state of the microscope. We would observe that the development of the microscope is closely allied to the development in micrography. Considerable progress in the development of special microscopy can

only be attained through improvement in the existing microscope. The improvements were so imperfect that improvements in their onstruction were imperatively necessary. The operator himself could alone realize the great need, and through perpetual complaint and fault-finding the microscope makers were induced to make improvements. The optical power was so imperfect the operators themselves often made important improvements. We recall at present Leewenhock, Hook, Euler von Gleichen.

OBITUARY.

The alumni of the American Veterinary College are mourning the loss of one of their members, the first they have had to lament.

ANTHONY WOLF,

of Philadelphia, after an illness of three days, died on Sunday, the 18th of January, from pleuro-pneumonia.

Occupant of the scholarship for the state of Pennsylvania Mr. Wolf was a young, hard working and intelligent man, liked by every one who knew him; and by his death, to-day regretted by his comrades,the veterinary profession has lost from its ranks one who would have been a credit and a honor to it

EXCHANGES AND JOURNALS.

HOME EXCHANGES.—American Bookseller, Scientific American, Hospital Gazette, Medical Record, Country Gentleman, Turf, Field and Farm, New York Rural, American Agriculturist, Prairie Farmer, Practical Farmer, Ohio Farmer, Scientific Farmer, Maine Farmer, National Live Stock Journal, Western Sportsman and Live Stock Journal.

FOREIGN EXCHANGES.—Journal de l'Agriculture, Veterinarian, Veterinary Journal, Recueil de Medecine Veterinaire, Archives Veterinaires, Mouvement Medical Clinica Veteirnaria, Revue fur Thierheilkunde und Thierzucht, Archiv fur Wissurschaftliche und practishe Thierheilkunde, Band IV, 6 Heft, Bulletin de la Société Centrale de Medicine Veternaire.

NEWSPAPER.—Western Sportsman, Western Agriculturist, Our Dumb Animals, Vermont Record, The Ploughman, The Leader, New England Farmer, VerFarm Journal, Central Union Agriculturist, The Weekly Mail,

CATALOGUES.—Physician and Pharmacist Record, AlbanyMedical College Introductory Lecture, Scientific American Catalogue.

COMMUNICATIONS RECEIVED.

F. S. Billings, V.S., A. A. Holcombe, D.V.S., R. Wood, V.S., W. J. Coates, D.V.S., G. P. Penniman, D.V.S., F. S. Winchester, D.V.S., Nemo, Truth, J. Gerth, Jr.

American Veterinary Review,

MARCH, 1879.

ORIGINAL ARTICLES.

ATROPHY OF THE PLANTAR CUSHION.

By G. Chenier. Translated by A. Liautard, M.D., V.S.

(*Continued from page* 464.)

IV.

INDIRECT CONSEQUENCES OF THE ATROPHY OF THE PLANTAR CUSHION.

If the contraction of the wall is the most immediate effect of atrophy of the plantar cushion, and if it is the most direct, it is not always observed as the first result. There are other lesions that the practitioner often observes more readily, because their objective symptoms are more manifest, or because they are accompanied with lameness.

1. *Symptomatic Quarter Crack.*—One of the most common sequelæ of the contractions of the wall is this disease. Let us prove it. Veterinary authors recognize two varieties of cracked hoofs: toe cracks, seldom seen in front, quarter cracks, exceptionally met with in the hind feet.

Taking the etiology as a base for classification, we will divide them into accidental and symptomatic quarter cracks. The former,

quite rare, are due to causes imperfectly understood and probably of the same order as those producing toe cracks. They appear suddenly, and involve the wall in its whole thickness and extent. They follow the directions of the fibres of the wall, are rectilinear.

Symptomatic quarter crack is a consequence of the contraction of the wall; it is formed more slowly than the accidental quarter crack, is seldom complete, and in the majority of cases seldom extends beyond the two superior thirds of the wall. It is more common on the internal than on the external quarter, a rational fact, since the contraction is often unilateral, and in this case it is the internal quarter which is abnormally altered. When the contraction is double, the internal quarter is more contracted than the external.

The symptomatic quarter crack is seldom straight; though it nearly follows the general direction of the fibres, it is always more or less irregular and flexuous, either in the direction of the thickness or length of the wall. Almost always *deep* at its origin, it has a tendency to become *superficial* as it extends beyond the coronary band. Such are its most common and general symptoms. Let us add also that it is prone to return. Why is it a symptom of the contraction of the wall, and therefore a consequence of the atrophy of the plantar cushion? Immutable in the regions adherent to the os pedis, carried in its posterior parts by the motions of the fibro-elastic apparatus, the wall in the level of the posterior regions of the bone operates a sudden deviation from outwards inwards. It is that motion which renders the symptomatic quarter crack more or less irregular and sinuous; unless to the permanent actions of the motion of contraction is added that of one of the causes which give rise to the accidental quarter crack, in which case the lesion follows the direction of the fibres.

The etiology of the variety of quarter crack that we call symptomatic, was not unknown to Lafosse, who said: "When the quarter contracts, the hoof breaks in its lateral part."

2. *Symptomatic Corn.**—We call symptomatic corn the variety which is the consequence of the atrophy of the plantar cushion,

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* Bleime of the French.

or, if it is preferred, which is one of the first symptoms manifested of the contraction of the wall.

The idea of looking at this contraction as a cause of corns is not new. Lafosse, Sr., had already remarked that dry corns may appear, without any *apparent causes*, on feet with strong heels, and for this reason he called them *natural*. M. Bouley prefers the name of *essential*, because, for him, these lesions are "inherent to some feet, as a consequence of their manifestation of their condition," and he adds that "they are principally seen in heavy, high, contracted or hoof-bound feet; or again, but accidentally, in those which, by want of wearing, an excessive length has been reached." We believe that from an etiological point of view, corns ought to be divided into three categories, a first, for those in which the contraction of the wall exists, and we would call them *symptomatic;* a second, which we name *essential*, appearing in feet with high heels from neglect of shoeing; a third category, including the corns characterized by high inflammation, with suppuration or gangrene of the velvety tissue underneath the extreme end of the branches of the sole; and corns exclusively found in flat feet with low heels, which in the majority of cases are due to the compression, by the shoe or a foreign substance, of the corresponding region of the sole, naturally too weak or rendered so by the shoer.

Considered in the symptomatology and the prognosis, the varieties of corns differ. The symptomatic corn is always dry; the essential corn may be *dry* or *moist*. The *accidental* corn is always suppurative. This last is the most serious; if neglected it may be accompanied with separation of the wall. The symptomatic corn is subject to return.

How explain the formation of the dry corn in case of contraction of the wall? If the action of the plantar cushion upon the velvety tissue underneath is harmless in the physiological condition, it cannot be so when that organ has lost, by its atrophy, its elasticity. There is then an abnormal pressure, producing a transudation through the walls of the blood vessels of the velvety tissue, blood which is mixed with the layers of horn as they are secreted.

At any rate, from a practical point of view, we may say that the dry corn is very generally the first objective symptom of hoof-bound; and for this reason does it most generally appear on the internal sides. This same peculiarity distinguishes the symptomatic from the essential dry corn, which affects at the same time, both sides of the foot.

Some corns are called stable corns,* because they appear after long standing in a stall. This is a symptomatic corn, resulting from atrophy of the plantar cushion, which takes place when inaction is too long maintained.

The essential dry corn may become moist, and even suppurative. Most likely then the transudated blood is in too great a quantity, for it cannot penetrate far enough the layers of horn in way of formation, and forms between the deepest layer and the living tissues, an effusion which undergoes the pyogenic transformation.

3. *Navicular Disease.*—Is navicular disease also a consequence of atrophy of plantar cushion? Having never observed that disease—unless we have mistaken it for hoof-bound proper—knowing it only by what you have read on it, we cannot be as affirmative as we have been for the symptomatic quarter crack and corn.

However, we have serious reasons to believe that navicular disease is also a consequence of the atrophy of the plantar cushion, and that its lesions are, so to speak, the extreme degree of the disorders of the atrophy of the fibro-elastic apparatus of the foot. Our opinion is created because the causes attributed to navicular disease are generally of the same nature as those likely to produce hoof-bound: special predisposition of "well-bred" animals, racing horses, long rest, dryness of the horn. What is certain is the rarity of this affection in France, and its reputed common appearance in England amongst high bred animals.

If we now look into the symptoms, we see that navicular disease, like hoof-bound, is most common in the front feet, and locally manifested by contraction of the heels. M. Bouley says:

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* Bleimes d'eiurie.

"Nothing is more common than to see the contraction of the feet coincide with corns and *navicular disease*." Lafosse is just as positive, and says: "In cases of navicular disease the hoof-bound is so marked that the frog is scarcely seen at the bottom of the cavity on the plantar face of the foot, while there is union of the heels with an inflamed condition of the frog."

The symptoms obtained by the standing of the animal, are also common to both diseases: "At rest the hoof-bound animals assume the same standing position as if suffering with navicular disease" (L. Lafosse). "In navicular disease the animal points with one, or alternately with both, if both are affected; the rest on either foot is very short, the hind legs are brought under the centre of gravity, the back is arched, the decubitus is frequent. Coming out of the stable, the legs are stiff, feet are moved close to the ground, the shoulders are limited in their motions. After warming by exercise, the legs are supple, the shoulders more free, but as soon as the animal cools off, and especially after a hard day's work, all the symptoms reappear more marked. The disease and its consequences increase with time." Such are, according to Lafosse, the symptoms of navicular disease. Are they not similar to those of the well developed hoof-bound?

The same analogy is observed in the course and results of treatment. "In the first period, navicular disease is relieved if the animals are put to rest *without shoes* in a soft, damp ground-floor box stall, or turned out on marshy grounds." When the disease is well marked, the best modes of shoeing are the bar shoes or the slippers. "The bar shoe, with a piece of leather, felt or vulcanized india rubber or gutta percha, will always be preferable." Mr. Rey objects to the bar shoe, because the frog being atrophied, this shoe throws the rest back on the heels.

M. Lafosse, we believe, is the first French veterinarian who attributed navicular disease to high or rapid action. He says: "Would not the aptitude of animals used to rapid gaits be the physiological cause of that disease? The frequency of it in front feet and the part these legs play in low motions, gives this question some foundation." Rey, in 1865, adopts this idea, and amongst occasional causes he names "the fast gaits, high jumps,"

and adds "the disease is almost peculiar to high steppers." Goyau is of the same opinion.

For both diseases we see the question of etiology is yet unsettled. For both the same causes are called into play.

(*To be continued.*)

A SHORT SKETCH

OF THE HISTORY OF THE DEVELOPMENT OF COMPARATIVE MEDICINE.

From the Thierärztliche Jahrbrücher, 1878. *By Prof. Dr. J. E. L. Falke, of Jena.*

TRANSLATED FROM THE GERMAN, BY F. S. B.

MEDICINE IN ANTIQUITY.

The rising son first illuminated the medical horizon among the ancient Greeks. There medicine stood under the influence of the gods, especially represented by Asklepias and his posterity, he having first performed much in their service. Cylule was the especial protector of animals, and the discoverer of different curative and protective medicines against the diseases to which they were subject. We observe by this ideal people the active observation of the favorable and evil influences of physical agents during treatment; they also observed that animals instinctively shunned surrounding dangers and sought protective influences. Empirical veterinary medicine took its beginning and became gradually more perfected with the use of animals for sacrifice in the temples. Behold the beginning of Anatomy, Physiology and Pathology! The scientific element there took an early birth. *Philosophy was the alma mater of medicine.* I place express emphasis upon this fact, as we always find, in tracing the history of the cultivation of man, that where he has disdainfully turned away from the frequently despised teachings of the thinkers, a coarse materialismus soon made itself apparent. For the practitioner, we cheerfully defend the two Baglivic pillars of medicine

—"Experience and Comprehension." But the experience of individuals often varies to an extreme degree, and the understanding (comprehension) of medical objects is not to be confined within too narrow limits, and always requîres renewed criticism—the *cognitio certa ex principiis certis.*

One of the seven Thales of Milet, (629 –544 B.C.) by means of his natural philosophical taste, inspired in his students an active desire to make observations upon the vital phenomena of the animal organism, and to consider anatomical relations which led to the development of a theoretic medicine.

Pythagoras, of Samos, (580–504 B.C.) greatly enriched his knowledge by journeys to Egypt and to cultivated (in the educational sense) parts of Asia, and on his return to Krotona established the first medical school, where he especially gave utterance to the conviction, *that medicine and the public hygiene were things which did belong to the priests.* His student Alkmæon, also Empedocles, (born 504 B.C.) and as Aristotle expressly mentions, Diogenes of Appolonia, busied themselves with anatomical researches upon animals with the desire of furthering themselves in their work as doctors; and Hippocrates (460 B.C.) is declared by Democrites to have been the wisest of all natural philosophers, as he found him busied with anatomical researches. Hippocrates is, however, to be declared the hero of medicine, in that he betook himself to the consultation of the Tables of Devotion, which those healed in the Asclepien temples had offered to the gods in thankfulness for the cure. Upon these tables were designated the nature of the diseases and the means by which they were cured; from these Hippocrates drew conclusions of the value of the different means of healing, and set the wheel of medical progress rolling in a victorious direction, and uttered his most important saying, "*that the human body was not to be understood without a knowledge of the entire world.*" We observe that he must have dissected diseased animals, as he speaks of hydrops and hydatids in the lungs. He combatted the ruling idea with regard to the nature of epilepsia, *i.e.*—that demons were the cause of the same—as by opening the cranium of goats affected by the disease in question, he found water to be present.

Xenophon (440 B.C.) wrote a work upon the training and treatment of horses, and one on the military value of cavalry.

Aristotle, (384 B.C.) the gifted student of Plato, combatted many mistakes of his predecessors with regard to human diseases, by means of numerous dissections of animals. He also gave short descriptions of some diseases of the ass, horse, cattle, swine, dog, elephant and some fishes. Naturally, we also find in him many mistakes with regard to the comparisons drawn between the individual species of animals and their physiological and psychological characteristics. He himself gives utterance to his doubts, as the inner construction of man was but little known, and the knowledge must be gained by the dissection of animals.

Man was not so scrupulous under the Ptolomaischen queens, as we find him here dissecting the human body; and the knowledge thus obtained spread, with other sciences, over Asia Minor and Egypt. Herophilos of Chalcedonia, (180 B.C.) one of the first leaders of scientific anthropotomy, made himself especially valuable by his investigations for the seat of human diseases. Much of this valuable material passed into forgetfulness with the development of the empirical school. An opportunity for the development of comparative anatomy by the section of rare animals used in the combats of the Roman circus during four centuries, was entirely neglected.

Aurelius Celsus (40 B.C.–20 A.D.) wrote a great work, "de Artibus," in which he treats of the diseases of man and animals. Columella and Pelargonius owe their knowledge of animal diseases to him.

Lucius Junius Moderatus (40 A.D.) gives directions for the treatment of diseased horses, sheep and goats in his writings upon agriculture. This work received much consideration, and has been widely distributed by means of translations, thereby contributing largely to the development of veterinary medicine. Claudius Galenus, (131–201 A.D.) who is noted for his careful education, and the mathematical exactitude with which he treated the rich treasury of material at his command, critically applied himself to studying the phenomena of nature, and recommended the most diligent dissection of animals. He seems to have used apes or

monkeys, as he only had opportunity to dissect a human cadaver three times. He most strongly recommended the human practitioner to busy himself with observations upon animals. At his time we find not only veterinary practitioners, but teachers of the principles of veterinary medicine also. Since the third century veterinarians held army appointments, and were employed to watch over the health of animals kept for combat in the circus. According to a decree of Constantine, the veterinarian was placed equal to the mediciner with regard to the privileges and advantages of his art. The luxurious stables of the Kaiser of Constantinople may have aided not a little in the progress of veterinary medicine. In Rome, the veterinarian was known as mulomedicus, and the art as mulomedicina—a term we also find used by Columella and Vegetius.

Of the medical and veterinary writers of the fourth century one alone, Bishop Nemesius, seems to have followed a scientific direction. It is no wonder that medical art remained dead for several centuries. The Arab and the Moor were alone the teachers of Europe. The Arabic doctor was, however, nourished and brought up in superstition, and treated diseases accordingly. He looked upon disease as the product of supernatural forces, only to be combatted by cabalistic formulæ and amulets. Aetius, (550 A.D) a noted doctor in Amida, in his Tetrabiblion speaks of the epidemics and epizootics which prevailed at that time. The collection "hippioitrica u, de rustica lib xx," is worthy of mention.

MIDDLE AGES.

Under Constantine Porphyrogenetes, a breath of life again animated the dead mass, to which also contributed the philosoph and mediciner, Michael Psellus, as well as the pest which from the early part of the twelfth century spread desolation among the generations of man. The scientific spirit of the Roman Kaiser, Frederich II, (1194–1250) exerted a favorable impression on the existing conditions, for he not only founded schools for the study of general science at Padua in 1222, at Naples in 1224, also in

Messina, and in the last years of his life at Pavia, but also appears himself in the character of a veterinary writer; he also assisted his "marescallus major," Sigerius Ruffo, in his scientific works upon natural history, and comparative anatomy and pathology—said Ruffo being especially noted for his teachings with regard to the diseases of the extremities. The "Anatome porci," from Colophon, is also worthy of mention.

Demetrius, the body-surgeon of Kaiser Michael Palæologus, especially distinguished himself by his sharp comprehension of the natural laws regulating the higher organisms, and the resemblance which their diseases had to each other. Petrus de Creseventiis, who wrote in the thirteenth century, is to be mentioned as having carefully considered the diseases of animals in his writings upon agriculture. Many superstitions are to be found mixed up with the writings of this period.

Mondini again received permission to dissect the human form divine, in consequence of which, in 1315, he published an anatomy with a characteristic introduction. He correctly intimated the nature of the pulmonic circulation, which was more fully demonstrated six years later by Columbus of Cremona, who was allowed to dissect the cadavers of fourteen men each year, and who also practised *vivisection upon dogs and swine.* About his time Master Maurus or Marius of Cyprus, with the assistance of a veterinarian from Germany, gave out a work upon the diseases of horses and cattle, to which was prefixed anatomical descriptions with illustrations. Dino was the son of Pietro Dino (1350), a family noted as having seven veterinarians among its members. His "Mascalcia divisa in quinque libros," is, as he himself says, a compilation from the writings of Vegez, Aristotle, Jordanus Rufus, and Theoderich. Bartolomans Spadafora, of Messina, (1368), published a work in Sicilian upon veterinary medicine. The best work was, however, incited by Prof. Mondini, and found especial protection and support in Prag under Kaiser Carl IV., who founded the university in 1348, where medicine was taught from the beginning. In 1376 the university, which had been recently founded at Montpellier by Pope Nicholas IV., received permission to dissect the human cadaver. The study of anatomy

was much excited by the work of Guy, of Chouliac, which appeared in 1393.

The study of comparative pathology became more and more developed, and was much assisted by the work of Antonius Maus upon animals and murderers. Caspar Bouhin and others relate in the "Rousset Shrift, de Hysteratomy on infeutment cæsarian," Paris, 1551, that the cæsarian section, which had been successfully performed by Galen on a deer, *was first successfully performed by a Swiss veterinarian named Jacob Nufer, of Siegerhausen, who performed it upon his wife in* 1550, *mother and child doing well.*

Up to the fifteenth century, veterinary medicine thrived in Italy alone, where it received favor from Kaiser Frederich II. We find Italian veterinarians and equerries at all the European courts during this period. The art of breeding was essentially forwarded in Germany by the excellent work of Marx Fugger, entitled "Zucht der Kriegs u. Burgerpferde," Augsburg, 1578. Veterinary science bloomed greatly in Spain at this time. Alphonso V. of the Arragons ordered his majordomos to write a work on veterinary medicine, and to call to his assistance the most competent veterinarians. This was executed by Don Manuel in the Calatonic dialect, and translated and added to in that of Castile.

A marked transformation is apparent from the fifteenth century onwards. The earth was illuminated by the most brilliant intellectual undertakings, and the heavens were illuminated and the flashes of intellectual light struck against the hierarchy of holy superstitions and it fell. "Nature awoke from her long sleep, and stretched her limbs from the panesis in which they had been confined." "O, Jahrhundert, O, Wissenschaft, welche Freude in solcher Zeit zu leiben," said the young German humorists, Erasmus and Ulrich von Hutton. Among the principle workers of this period was Andreas Vesalius (1513–1564), who by means of his classic education, as well as by his temperament, was able to overcome all hindrances, and was made professor of anatomy and surgery in his twenty-third year. His contemporaries speak of him as a man to be trusted, and such he was, indeed. He knew

what he would have, and had what he would; he was called a lover of the right, and that he was, for he battled for the recognition of his endeavors against the stupidness and condemnation of the world. Does the pioneer fear blame when by his assaults a few more rays of light enter the sanctity of superstition and ignorance? Is there no recognition for him? yet posterity forgets not to do him honor. Vesal produced an immense transformation by means of his activity as a teacher, and his wonderful anatomical diligence and by his wonderful "de humani corpors fabrica," Basel, 1543, which received the active and obstinate opposition of the church, and yet within a century passed through fifteen editions.

Here we see two striking and enlivening examples, and that in a dark and gloomy period, how work, which is performed in truly scientific spirit and manner, cannot pass away, even though its contemporaries trample it under foot—Vesal's work on "Immortale Opus," and Columbus' "Voyage to an Unknown World." After Vesaliu's comes the work of Baco, of Verulam (1561–1626), "Zootomæ necessitas in universa prope modum humana sapientia;" his excellent philosophical education also exerted a most favorable influence upon the investigating methodic in medicine. Fabricus ab aqua pendente, born 1537, made the discovery of the value of the veins by man and animals at this period.

Adrovaudi published the following works, "de ornithologia," 1599; "de quadrupedilius," 1616; "del anatomia e dell' infirmita dell cavallo," 1598; "anatomia dell cavallo infirmita e rimedii," 1599, 1602, 1618; and his scholar, Volcher Coiter, 1600; "die ersten guten lectiones atque icones uber all gemeine vergleicheude pathologie," Nurnburg, 1573–75. About the same time the general knowledge was increased by a work entitled, "Hipposteologie," Paris, 1599, from Jehon Herrard, and the work of Carso Revini, senator of Bologna. Casper Asselli *discovered the chylus vessels by vivisection upon a dog*, and Joham Pequet of Montpellier, rightly named the ductus thoracicus, which had been previously discovered, but looked upon as a vein. This discovery was also made upon a dog. William Harvey (1578–1658) demonstrated in his work "Exercitatio anatomica de motu cordis et

sauguinis in animalibus" 1628, the circulation by the most exact observations upon animals, and studied the formation of the heart in all animals to mollusks and insects. The people of his time were not grateful for these valuable contributions, and he therefore postponed the publication of his work, "Exercitationes de generatione animalium, quibus accedunt de partu, de membranus ac humoribus," wherein he mentioned the noted saying, "Omne vivum exovo," until shortly before his death, although ready for publication in 1633. Malpighi continued his observations with great zeal. and published his work in the work entitled, "de formatione polli in ovo," and in an appendix, "de ovo incubato," London, 1673; and the student Ludwig Hammer, in Leiden, discovered the spermatozoa in 1677. Antonio Fallisneri concluded this work, until Haller in his "Istoria della genetione" Venice,1731. Winter Von Adlersflugel wrote a book entitled, "Hippiater expertus, der wohlerfahrene Rossorzt," Nurnburg, 1698. Marco Aurelio Saverino, (1580–1656) gave the picture a more rotund form by his work "Anatomia Democritea," Nurnburg, 1645; he compared cuncta animaliune genera, the lowest animals as the echinoderms and zoophytes with man in "quibus arcana majora suspicor, quane ut vulgis opinetur." He may be rightly looked upon as the founder of the doctrine "de usu partium," as he most earnestly advocates the necessity of the knowledge of comparative pathology to practitioners. The discovery of the microscope by Hans Jessen and his son Zacharias, toward the end of the sixteenth century, is observable in the work of Severino. Although the Amsterdam naturalists, Swommerdam—1637-1680—and Leuwenhock at Delft, 1632–1723, had to combat with all the inconveniences of incomplete instruments, the latter clearly demonstrated with the same, the immediate passage of the blood from the finest arteries to the finest veins by man, frogs and fishes; these observations are to be found in his writings entitled, 'opera omnia s, arcana naturæ ope microscopii detecta," Leiden, 1722.

Thomas Willis essentially contributed to the knowledge of the brain by his writings, "Cerebri anatome," London, 1644; "de anima brutorum," 4 Edi. Oxford, 1674; "Pathologia cerebri et

nervosi generis," Oxford, 1667. Samuel Collins also contributed much to the work of progress in his "Systema anatomicum," London, 1683–85, in which he endeavored to give a firm basis to the dietetic, pathologic and therapie of the human organism. Albrecht V. Haller trod in his foot-steps.

LATER PERIOD.

Notwithstanding several universities were already in existence in the sixteenth and seventeenth centuries, from which many distinguished men had gone forth who had powerfully influenced medicine by word and pen, yet the greater number of these doctors were full of prejudice and bigoted affection for antiquated forms, as is illustrated by a prescription for a wound-balsam to be found in the Pharmacopia of Wurttemburg, 1750, in which we read that the said balsam was to be prepared from many *vegetables, six young living puppies, six living frogs, and twenty-four living earth worms.*

At this time took place the fortunate experiment of Spallanzani and Rossi at Pisa, and Simms over the artificial fructification of plants and animals, including woman. Baron Sind's "grundlicher Unterricht von der Pferdezucht" and "der ein Feld und auf der Reise gescivind heilende Pferdearzt" appeared in 1769 and 1770, and in 1775 "Vollstandige Unterricht in den Wissenschaften eines Stallmeisters," and in 1785 Valentine Trichters, "Anatomie des Pferdes." Bridge's anatomy of the horse's foot was already published in 1751, and Stubbs' wonderful anatomy of the horse in 1766. A work which received a general acceptation and translations into other languages was W. Gibson's "A Treatise on the Diseases of the Horse," London, 1751.

As to zoology it is well enough known that the learned men of antiquity were active in such researches, yet Conrad Gessne, (born Zurich, 1575), essentially contributed to a scientific methodic in his "Nasurgeschichte der Thiere." A sure methodic was however only to be obtained by means of comparative anatomy. Ray, (1628–1707,) Buffon, (1707–1788) and Linnée, born 1707, gave the greatest impulse to the classification of the animal kingdom; the greatest service however was given by Baron

Cuvier, born at Maempelgard, 1760, in that he reviewed the detailed works of his predecessors in a true scientific manner. Although much credit is due to Blumenbach for his "Naudbuch der Comparativen Anatomie," 1805, in which he followed in the path of Haller, and the best of his predecessors, and followed the conviction that physiology derived more light from comparative anatomy than from anthropotomy alone; and although in his lectures and work he took notice of the development of veterinary medicine, yet greater service was rendered by Cuvier through his "Leçons d'anatomie comparée," Paris, (1800–1805.) "As every organism," says Cuvier, "unites in itself the conditions to its existence, so must every part of it so combine, to form a complete whole." The analysis of these conditions leads to the discovery of general laws. In his 19th year Cuvier wrote to his friend Pfaff, "we must study exactly the relation of all existing beings with the surrounding world, and especially endeavor to discover how far they individually contribute the economy of the whole."

Marie Françose Xavier Bichat, (1771–1802) the creator of the new French school of medicine, the zealous teacher of anatomy at Paris, who enlivened anatomy by means of physiology, deserves especial mention. Cloquet, Beclard, Magendi, Berres, Schwann, M. Barry, Heusinger, Heule, Rathke, Kolliker, and others have been his followers. Ernst Ludwig Heim, born 1747, rendered essential service through his writings, essentially contributed to comparative pathology by his dissections of over one hundred cattle cadavers which had perished from rinderpest and anthrax, and by assisting in the formation of the first German veterinary school in Germany in Berlin in 1790, after France had erected a school at Alfort with great liberality, following thereby the idea of Cothenius "sur la necessité d'une ecole Veterinaire." Essentially contributing to the erection of the same was the utter impotency of the human doctors in the face of the devastations of rinderpest in many parts of Europe at this period

We need not wonder that France came to such conclusions, as there is no land in Europe where sorcerers and "devil drivers"

have so persistently held to their existance as in "La Belle France." A much esteemed writer speaks of the miracles of St. Hubert, St. Antons, St. Aloys, in a way scarcely equalled by Cato and the most obscure Greek Hippiaters. The most noted work was "Le parfait Marechal de Solleysel," first edition, Paris, 1664, and which was translated into many languages; the book has no scientific value. Saunier "la parfait connoissance des chevaux" 1734, and Gaerincre, "Ecole de la Gavallerée," 1754, were no improvement on the same.

Under the direction of Scotti a small Veterinary Institute had already been called into existence in Vienna, which was rebuilt under Joseph II, the basis of the present extensive establishment being laid by Wolstein. München, Dresden, Hanover, Stuttgart, Carlsruhe all followed in course of time. A school was erected in Spain in 1793; in Italy schools are to be found in Turin, Milan, Naples, and Bologna. In England, at London, Edinburgh and Glasgow; in Holland, at Utrecht; in Denmark, at Copenhagen; and Sweden, at Scara, while in Russia the Dorpat Institute is noted for its many scientific contributions.

Other contributors to the value of comparative studies in the field of medicine were Ignaz Dollinger, (1770–81,) the untiring naturalist, who, to illustrate the gigantic strides of science, frequently began a new year's lecture with the remark, that what he had the previous year lectured was no more true; Lorenz Oken, (1779–1851); Carlasmund Rudolphi in Berlin; as well as John Fried. Mechel, (1781--1833), and Carns, who all clearly demonstrated the many-sidedness and variety of the organic world. Further should be mentioned Diedmann, Kirby, Grafenhorst, John Hunter, W. Kooke, Laennec, Dupuytren, Otto Proschaska and others.

With Rudolphi worked Diederichs and Hertwig. They were not only well known as teachers at the Berlin school, but also by their work in the field of veterinary surgery—the latter especially by his contributions to physiological actions, as well as toxicological of medicamenta, and his clearing of the question with regard to the existence and genesis of lyssa.

This direction found its turning point in the physiological

healing art of Wunderlich "pathologie is the physiologie of the diseased organism. She requires therefore the same means and methods to confirm her facts, and the same logic to the demonstration of her proofs." Virchow and the natural scientific school have followed in the same foot-steps. "Omnis cellula e cellula."

PLEURO-PNEUMONIA.

OFFICIAL ORDERS ISSUED BY GENERAL PATRICK IN RELATION TO PLEURO-PNEUMONIA.

Office of the Board of Health,
Municipal Department Building,
Brooklyn, Feb. 14, 1879.

To all Veterinary Surgeons and all Owners of cattle, their Agents, Employés or Servants, in the Counties of Kings and Queens :

Having been appointed by the Governor his agent for the enforcement in the counties of Kings and Queens of the provisions of chapter 134 of the Laws of 1878, entitled, "An act in relation to infectious and contagious diseases of animals," by virtue and in pursuance of said act and the rules and regulations made by His Excellency thereunder, and in accordance with his directions, I do hereby require that all owners of cattle, their agents, employés or servants, and all veterinary surgeons shall report forthwith to me at the office of the Board of Health of the city of Brooklyn, all cases of disease among cattle in either of said counties known or suspected by them to be of an infectious or contagious character. And, by virtue of the said authority, the movement of cattle in any part of said counties is also prohibited and forbidden, either from any landing place or dairy to a place of slaughter, or from one dairy to another, or to any dairy or slaughter-house, except upon a permit granted by myself after the examination of said cattle has been made in such manner as shall be directed. All cattle intended for slaughtering in the city of Brooklyn will be landed at the foot of North Ninth street, or at the foot of Gold street, and moved from these landings only on a permit from this

office. Landing places for milch cows will be designated and made known as soon as the proper arrangements therefor can be made.

Whenever notification is received at this office that any cattle are sick with a contagious disease, an inspection will be immediately made, and all proper steps will at once be taken to arrest and prevent the spread of said disease. Inasmuch as these diseases may be conveyed by persons from the sick to healthy cattle, all persons employed in the care of cattle that are well, are forbidden to go in stables or upon premises that are infected, or where cattle that are sick with a contagious disease are kept; and likewise persons employed in an infected stable are not permitted to go among well cattle, or upon any premises where well cattle are kept.

Where cattle have been exposed to infection, their owners will be allowed, under proper restrictions, to have them either slaughtered or quarantined. If slaughtered, their meat will be examined, and if proper for human food, may be disposed of as such. When quarantined, it must be done entirely under the direction and control of this office.

When diseased animals are reported to this office, as above required, and are thereafter ordered to be slaughtered, a certificate of their value will be made for transmission to the Governor, and a duplicate thereof given, if required, to the owner. No such certificate will be given, however, in the case of any diseased cattle that may be found not having been reported to this office as required.

Attention is called to the fact, that any violation of or refusal to comply with any of the provisions of the said act, or of the rules, regulations and orders made under it, is made a misdemeanor, and subjects the offender to a fine of $250 and imprisonment for one year.

It is to the interest of all slaughterers of cattle, cattle dealers and dairymen, that the contagious disease now known to exist among the cattle of this locality, shall be eradicated as soon as possible, and therefore the earnest co-operation of all such parties is confidently asked, that the unrestricted traffic in this most important part of the Commonwealth's commerce may be re-established at an early date.

HEADQUARTERS BROOKLYN BOARD OF HEALTH,
Feb. 21, 1879.

In view of the existence of contagious pleuro-pneumonia on Long Island and vicinity, the owners of cattle in adjacent counties are earnestly requested to co-operate with the State authorities in their efforts to stamp out the disease. Attention to the following suggestions will greatly facilitate the work of the cattle disease staff, and is strongly urged for general adoption:

First.—Purchase all new cattle from neighbors only whose stock is known to be sound. Avoid purchasing from dealers, and refuse even Western cattle that have been kept for a day in common cattle yards or dealers' stables.

Second.—In the case of all new purchases, even from neighbors, when the stock has passed over a public highway, place such animals in a separate building at a distance from the home herd, and keep them thus secluded for one month after purchase.

Third.—Should any such quarantined animals become sick, report the same at once to General Patrick, Board of Health, Brooklyn, together with the place they were brought from, the name of the former owner and the mode of conveyance.

Fourth.—Notify General Patrick at once of all suspicious cases occurring among cattle, even independently of the purchase of new stock.

Fifth.—Exclude all cattle dealers, butchers and visitors, under all circumstances, from yards and buildings in which store cattle are kept.

In view of the importance of the speedy extinction of the disease, the hearty co-operation of the owners of cattle is confidently expected.

A CARD IN REFERENCE TO THE CATTLE DISEASE AT BLISSVILLE. x

GAFF, FLEISCHMAN & CO.,

GENTLEMEN.—In accordance with your instructions to visit on behalf of the owners of the cows in the distillery stables at Blissville, with full powers to add to our number, and to exercise discretionary powers as to the killing of any animal which might be suspected of being affected by contagious pleuro-pneumonia; we

x from the N.Y. Herald

have to report that we have associated with ourselves for the above object, the following gentlemen, viz: Professor R. W. Finlay and H. T. Sears, M.D.

Herewith we send you a statement of the conclusions at which we have unanimously arrived, embodied in the subjoined report.

We remain gentlemen, yours respectfully,

GOING BROS.

REPORT.

We, the undersigned, having made a careful inspection and examination of the cow stables at Blissville, near the distillery of Gaff, Fleischman & Co., extending over a period of three days, have to report as follows:

We first visited these stables on Saturday, the 8th inst., and commenced our examination by inspecting the cattle in the centre shed. A careful examination of each animal revealed, with but very few exceptions, a healthy stock of cattle. Owing to sudden elevations and depressions of temperature, having an irritating effect on the bronchial mucous membrane, a characteristic cough is induced, principally affecting those animals next to the doors, but no alarming symptoms were found in a majority of cases. In some few cases an elevation of temperature was found. Physical examination of the chest revealed increased bronchial breathing, and in one or two instances a small amount of consolidation of the lung tissues was in existence, but no breaking down process was to be found; conclusive evidence to our minds that the animal had passed through a slight attack of broncho-pneumonia *only*. The general appearance of the animals affected was indicative of average health and animal spirits, appetite good, and the animal almost sufficiently fat to be butchered. In one case we found an animal suffering from pleuro-pneumonia of a sporadic or non-contagious type, as evidenced by the vitality of the animal, though somewhat emaciated. This cow, while being led out for a closer examination, jumped a ditch with perfect ease. The temperature of the animal was higher than that of any in the stables, the thermometer registering 107¼ degrees. Examination of the chest revealed effusions. A sample of the milk was

for microscopic examination, and revealed by a qualative analysis, made by Professor E. C. Spetzka of Columbia Veterinary College, oil globules in perfect shape; no pus corpuscles nor bacteria were found, the report being that the milk was perfectly healthy.

We again visited the stables on Tuesday, the 11th inst., and examined the second and third stables, the examination, as thorough as in the first instance, disclosing no evidence of contagious pleuro-pneumonia. Subsequently on the same day we revisited the stables in company with the Long Island City Board of Health, and expressed our readiness to slaughter any animal they might select, but they were satisfied with the result of our examination, and the general healthy appearance of the stock, and decided that it was not necessary to hold any post mortem examination, expressing themselves as satisfied that no contagious disease existed. We finally visited the stables on Thursday, the 13th, and found the sanitary condition improved, there not being a sick animal in the stables. To obviate the sudden elevation and depression of temperature alluded to in a previous portion of this report, we would recommend precautionary measures by adopting an improved style of building. In conclusion we have to express our firm conviction, from the result of the examination made, that contagious pleuro-pneumonia does not exist in the stables referred to above.

JAS. A. GOING, M.R.C.V.S.E.,
Veterinary Editor "Spirit of the Times."
R. W. FINLAY,
Professor of Theory and Practice, Columbia Veterinary College.
H. T. SEARS, M.D.
JOHN B. GOING, D.V.S.,

New York, Jan. 14th, 1879.

AN ACT

To incorporate State and Judicial District Veterinary Societies for the purpose of improving the practice of Veterinary Medicine in the State of New York.

The people of the State of New York, represented in Senate and Assembly, do enact as follows:

Sec. I. It shall be lawful for not less than five of the graduated Veterinary Surgeons in the several judicial districts of the Supreme Court of this State to meet together and organize Societies, and whenever said Societies shall be organized as aforesaid, they are hereby constituted bodies corporate in fact and under the name of "*The District Veterinary Society*" of the respective judicial districts where they shall be located.

Sec. II. Each of said district Societies, when organized as aforesaid, shall elect delegates who shall meet in the City of Albany, and proceed to organize—not less than 15 delegates being present—a State Veterinary Society, which shall be named "*The Veterinary Society of the State of New York.*"

Sec. III. The Secretary of each of the district Societies shall lodge in the County Clerk's office of some County within their district, a copy of all the proceedings and records of their organization; and it shall also be the duty of the Secretary of the State Veterinary Society to lodge in the office of the Secretary of State a copy of its records and proceedings had at the organization thereof; and the said County Clerks respectively and the Secretary of State shall file the same in their respective offices, and shall receive therefor a fee of one dollar.

Sec. IV. The State Veterinary Society shall appoint eight (8) censors to constitute a Board of Censors, who shall be divided into three classes, two to serve two, three to serve three, and three to serve four years; said Board of Censors shall meet at least once a year at such time and place as they shall designate, and thus met, six of them constituting a quorum, they shall examine all persons who are entitled to examination under the provisions of this act, and who shall present themselves for that purpose, and report their opinions in writing to the president of said Society; and on recommendation of the said board it shall be the duty of the president aforesaid to issue a certificate to such person or persons, countersigned by the secretary, and bearing the seal of said society, conferring upon him or them the degree of "*Licentiate of Veterinary Medicine,*" L.V.M.; and it shall not be lawful for any other corporation to grant to any person the said degree of "Licentiate of Veterinary Medicine."

Sec. V. Any person who shall knowingly and falsely claim or pretend to have or hold a certificate of license conferring upon him the degree of L.V.M., granted by the Veterinary Society of the State of New York, or who shall falsely and with intent to deceive the public, claim or pretend to be a graduate from any incorporated Veterinary College, shall be guilty of a misdemeanor.

Sec. VI. All veterinary practitioners, at the time of the passage of this act, and all persons who shall have received a diploma from any Veterinary College, shall be entitled to an examination by said Board of Censors.

Sec. VII. Candidates for examination shall pay into the treasury the sum of twenty dollars; candidates for admission shall pay into the treasury the sum of five dollars.

Sec. VIII. The Veterinary Societies of the respective districts, and the State Veterinary Society, may purchase and hold such real and personal estate as the purposes of their respective corporations may require; the district Societies not exceeding the sum of five thousand dollars, the State Society not exceeding the sum of twenty thousand dollars.

Sec. IX. The respective State and judicial district Societies may make all needful by-laws, rules and regulations, not inconsistent with any existing law.

Sec. X. The Veterinary Society of the State of New York shall be entitled to all the privileges and immunities granted to State Societies.

EDITORIAL.

Contagious pleura-pneumonia has at last forced itself upon the attention of the American public.

This dread danger has for years been lurking in our midst, gaining strength day by day as it quietly spread from numerous foci of propagation, waiting only for the opportunity which would some time come to spread like wild-fire throughout our land.

Every veterinary sanitarian in this country has watched with

increasing trepidation the insidious growth which this disease has made, and they have from time to time warned our authorities of the great risks which inaction in the matter invited.

New Jersey, in 1873, '74, and '77, experienced three important local outbreaks, without attracting especial attention from the authorities of the State, and numerous points of infection undoubtedly exist within her borders to-day.

Connecticut and New York States have, at various recent periods, met with serious losses from the same cause, and Long Island—the principal pest-hole of the disease—numbers hundreds of cattle now infected with the contagion. There can be no doubt that this latter locality has, since the introduction of the disease there in 1843, been the main centre from which it has been propagated to surrounding districts, for the authorities have looked on in silent contemplation without taking a single precaution to prevent its spread or adopting a single means of eradication.

To England's anxiety for protection against the introduction of animals affected with contagious diseases, and the search for facts regarding rumors of pleura-pneumonia within our borders made by the Canadian government through Prof. McEachran, do we owe the present warranted excitement in this matter.

The village of Blissville, lying on the outskirts of Brooklyn, between Kings and Queens counties, enjoys an unenviable notoriety by reason of the large number of cattle within its limits that are infected with contagious pleuro-pneumonia, for of the nearly 900 cattle in the district, it is, according to inspecting veterinary surgeons, somewhat difficult to find a healthy one. It was the report to the Canadian government of the casual inspection made of these and other stables that precipitated the investigation that is now being so thoroughly made.

With commendable promptness our Governor, under the provisions made by the law of 1878, relating to infectious diseases of animals, appointed Prof. Law, of Cornell University, to make a personal investigation of the cattle throughout the State.

The investigation was begun on Long Island, and shortly resulted in a report to the Governor of the serious extent to which pleuro-pneumonia was present there, and the necessary steps

which should be taken to secure protection against its further spreading. In a single day the Legislature lent its aid by appropriating $10,000 with which to defray the expenses of the stamping out and quarantining process adopted by the inspectors, and the Governor appointed Gen. Patrick to superintend the thorough execution of all orders.

This decided action taken by the State of New York, with the general publicity given it by the press, could not fail to command the attention of authorities in surrounding States, and so Connecticut, in her watchfulness, at once detected the broken quarantine made by an infected herd within her limits, and by informing the Board of Health of the City of New York, secured their detention, official inspection, and destruction.

New Jersey, fully awake from her long lethargy in the matter, is reported to be earnestly discussing measures that shall look to the extermination of the disease within her territory.

This, then, is the condition of affairs at the moment so far as pleuro-pneumonia is concerned. Let us look at the exigencies of the case and see what precautionary measures are demanded.

First, in the minds of the public at least, is the threatened destruction to our rapidly-growing export trade in live cattle. This has within a short time become an important industry, estimated at many millions of dollars, and it is to our own interest that it should be adequately protected. To accomplish this it will be necessary to satisfy foreign governments that our animals are free from infectious and contagious diseases.

But valuable as this traffic has become, its threatened destruction is not the most serious danger which besets us on the part of contagious pleuro-pneumonia; the comparative ease with which the disease would spread as an epizootic, infecting the great herds of the West, from which it could scarcely ever be eradicated, thereby crippling forever our live stock exports, and entailing a pecuniary loss not to be estimated, is the culminating calamity against which the strong arm of the law should now be invoked.

While the disease is confined to a few well known localities, as it is to-day, it can easily be stamped out, and our country effectually rid of its presence for all future time, unless it should

be again imported, when proper inspection would prevent its getting a foothold. To accomplish the desirable result of complete extermination, every State infected must adopt measures for destroying all animals affected with the disease, and quarantining all those exposed to the contagium, for a period sufficiently long to warrant its complete extinction; and even assuming the incubative stage to be so long as fifteen months, as is claimed by Ziegler, of Switzerland, three years time would be ample in which to destroy the last vestige of this dread disorder.

The prophylaxis of inoculation, efficient as it may be in an epizootic outbreak, certainly has no claims for adoption in connection with the disease as it now exists, for it would only prove one of the surest methods of spreading the disease, while our aim should be to confine it to its present quarters and there eradicate it at whatever cost the method may entail.

In the meantime our export trade in cattle should not suffer, for the animals so used are not taken from the infected districts, and they reach the seaboard ready for embarkation without any serious risk of becoming infected, unless there be an exception to those crossing the State of New Jersey. Let the infected States institute effectual systems of quarantine, and the national government appoint competent veterinary inspectors for each port from which cattle are shipped, and our trade with England and other foreign countries can go on unimpeded.

VETERINARY MEDICINE.

The need felt by the veterinary surgeons throughout the United States to regulate the practice of veterinary medicine is too well known by our readers to be recalled to their minds; and there is perhaps none who recognize this fact more than those in the State of New York. Last year already, though veterinarians were only indirectly connected with it, a bill was presented before the Legislature at Albany, but through some unknown cause was pigeon-holed, and probably will never again be brought to light. The need still exists, and *perhaps more than ever* is strongly felt

by every honest practitioner, be he regular graduate or self-made.

To obtain this and with hope that their action would be sanctioned by a majority, almost all the veterinarians of New York City and Brooklyn met together, and after some preambles of organization, drew an act for the regulation of the practice of veterinary medicine throughout the State. A copy of this was sent to every graduate veterinarian as far as could be known, requesting him to return the same with his signature if approving, or blank if unfavorable to it. A few days later a meeting of *all graduates* in the cities of Brooklyn and New York was called, and after considerable discussion, modification, and loss of time, an amended act was voted upon, section by section, and adopted for presentation to the Legislature.

We present the bill to-day to our readers, and hope that those who favor it will give it their assistance, and that those who may object to it will take advantage in the pages of the REVIEW to make their objections known.

It will no doubt require all the energy and influence of the true friends of the profession to make it a law, if we are to judge by the threat which one of the graduates present at the last meeting was not ashamed to make after the whole act had been accepted.

THE EXTENSION OF TUBERCULOSIS AMONG THE CATTLE OF BAVARIA IN 1877.

From the Ministerial Records, by Ph. J. Goring, M. V.

FROM THE DEUTSCHE ZEITSCHIFT FUR THIERMEDICIN, VOLS. IV., V., AND VI., LEIPZIG, 1878.

Mr. Goring begins his abstract from the above report by alluding to the very natural attention which all interested classes must give to the question of the injuriousness of flesh and milk from animals complicated by this disease, and to the very interesting experiments made by the late Director General upon the

subject, "*according to which no more doubt can remain of identity of the so often appearing 'Perlzucht' Tuberculosis of cattle, with the disease of the same name of man.*" Goring further calls attention to the immense economical interests which are thus placed in question, and remarks that at present the question of identity is still an open one.

At a meeting of the München Veterinary Association, held in that place April 22, 1876, it was decided that no trustworthy statistics then existed with reference to the extension of this disease in Bavaria, and that such knowledge was highly desirable, as also all collateral information with reference to the same. A ministerial order dated December 16, 1876, put this worthy object in motion, and the sum of the results thus obtained it is our intention to give in the following.

The number of cattle reported as complicated by tuberculosis in the kingdom of Bavaria for the year 1877 amounted to 4,976, which is 1.62 per cent. of every one thousand head of cattle in the kingdom. As to sex we find the disease was observed by 869 males and 4,107 females.

WITH REGARD TO SEX.

Steers.	Oxen.	Cows.	Young Cattle.	Calves.
146	652	3,905	248	25

NUMBER OF TUBERCULOTIC DISEASED PER 1,000.

By Steers.	By Oxen.	By Cows.	By Young Cattle.	By Calves.	Total.
5.84	1.39	2.50	0.35	0.09	1.62

The investigations with reference to the age of the deceased animals gave as follows:

64 under 1 year, or	1.31	per cent.
528 from 1 to 3 years old, or	10.81	"
1,846 " 3 to 6 "	37.80	"
2,445 over 6 years old, or	50.07	"

According to seat, whether serosæ or lungs, or both, were affected we find the following:

Lungs and serosæ	2,000 cases	= 41	per cent.
Lungs alone	1,599 "	= 33	"
Serosæ alone	844 "	= 17	"
Other organs	342 "	= 8	"

The grade of the flesh of the slaughtered animals by which tuberculosis was found, was as follows:

First quality.........	455 times,	= 10 per cent.
Second quality.......	1,921 "	= 45 "
Third quality........	1,902 "	= 45 "

One thousand two hundred and four cases of intra-vital diagnosis are reported. From the nature of the early stages of the diseases it is evident many cases must have escaped observation; also that with the perfection of the methodic investigation the next year's statistics will be much more complete.

ÆTIOLOGICAL CONDITIONS.

The hereditariness of the disease is most emphatically demonstrated. In 123 cases the disease was attributed to the mother, and in 43 to the father. Three cases are given of infection by means of the coition. Ten reporters look upon a very profuse milk secretion as the ætiological incentive. In four cases, more or less extensive pus-centres were looked upon as the point from which infection proceeded. Two reporters consider that the race exerts a depressing influence, and five are thoroughly confirmed in the idea.

"*This, the first report of the Bavarian veterinarians upon this most serious subject, has not brought to view the slightest proof of the genetic connection of this disease with the tuberculosis of man. Nearly all the veterinarians declare that any disadvantageous influence from the consumption of the milk or flesh of tuberculotic diseased cattle is as yet unknown to them.*" (The above passage is nearly a literal translation See page 299, of original.)

Under the title, "Die Tuberculose eine Infectious-Kraukheit," *i. e.*, the tuberculosis an infectious disease, Dr. Hubert Reich, of Mullheim, Germany, gives a most interesting paper in the "Berliner Klinischer Wochenschrift," No. 37, September 16, 1878.

Dr. Reich begins his paper with the remark that the idea that tuberculosis is an infectious disease is becoming more and more accepted, and the following remarks are given as evidence of the same. They have reference to the "*transmission of tuberculosis to a number of children by a phthisical midwife, and, indeed, by*

the direct way from mouth to mouth." In the little village of Neuenberg, of about 1,300 inhabitants, there were two midwives, R. and S.; S. was the one diseased, while R. was perfectly healthy. Dr. Reich then gives an account of ten children, all of whom died from meningitis tuberculosa, and all of whom were assisted into the world by midwife S., during the time when she presented the phenomena of progressed pulmonary phthisis; while during the same period not a single child died whose birth was assisted by midwife R., either from meningitis tuberculosa or any disease giving a suspicion of the presence of tuberculosis.

It was constituted by inquiries among the inhabitants that the midwife S. had the habit of sucking the mucosity from the mouths of new-born children, and that further she demonstrated most peculiarly affectionate tendencies for hugging and kissing them.

The results of Dr. Reich's paper are summed up by himself as follows:

1. In the time from the summer of 1875 to the fall of 1876, ten children died in Neuenberg from meningitis tuberculosa, who were born between April 4, 1875, and May 10, 1876.

2. A transmitted disposition was not to be proven by either of the ten children.

3. These ten children were assisted into the world by midwife S.

4. During the same period not a child born under the hands of midwife R., died of meningitis tuberculosis or a kindred disease.

5. Midwife S. had the above mentioned peculiar deportment with newly born children.

6. In three of the above mentioned cases of meningitis tuberculosa, the disease began with bronchitic phenomena.

7. Meningitis tuberculosa is not an endemic disease in Neuenberg.

In Virchow's Archives, Band 73, Heft. III., appears also a very interesting paper upon "Eine neue methode Tuberculose zu erzeugen," by Dr. Tappeiner in Merau.

The desire of Dr. Tappeiner to prove by experiment the correctness of the observation, that young girls from healthy families who become subjected to phthisis by long attendance on phthisic

persons, was due to the dispersion of infectious germs from the sputa in the air of the room. To this effect he made eleven experiments upon dogs—these animals are known to be resistant to tuberculos infection—several being confined at a time in a space of twelve cubic centimetres dimensions, into which by a spray-disperser was distributed in minute particles an emulsion composed of from fifteen to thirty grammes of the sputa of persons by whom caverns were undoubtedly present, the same being mixed with 300-500 CCm. aqua. The animals were subjected to the inhalation two times daily for an hour each time. In some cases they remained in the room, in others were allowed to roam about free during the intervals. It is self-evident that a quantitative introduction of the tuberculotic elements could not take place in this way, yet, with the exception of one dog, all the others presented on abduction the most manifest signs of miliary tuberculosis of the lungs, in most of the kidneys also, and in some the same were found in the liver and spleen.

The results of these experiments confirmed the suspicion that the aspiration of particles of tuberculous sputa was sufficient to produce tuberculosis by perfectly healthy dogs, which gives rise to the suspicion that the same way of infection takes place from man to man. Dr. Reich observes this can be obviated by having such patients isolated in large, airy, and well ventilated rooms, and that the probability of infection increases with the accumulation of such patients in the same rooms. *Cattle breeders and milk men should not be slow in learning a lesson from the above facts.*

F. S. B.

REPORT OF CASE.

DYSTOCIA IN A COW.

BY J. C. MYERS. JR., D.V.S.

January 23d I was requested by Mr. Rakers, a dairyman residing at Barrsville, to render obstetrical assistance to a cow distressed with difficult parturition during the preceding sixteen

hours. On my arrival I found the cow lying on her right side with every indication of extreme prostration, making at irregular intervals feeble efforts to expel a fœtus. A vaginal examination disclosed a malposition of the fœtus, the buttock and tail presenting. To remedy this dystocia I endeavored to change the presentation by forcibly pushing the fœtus back into the uterine cavity, and then effect a version. This procedure was an utter impossibility, by reason of the great weight of the calf and the resistance experienced by the uterine contractions of the cow. After failing with this mode of management and discovering no signs of fœtal life, I at once proceeded with a view of diminishing the contour of the buttock of the calf by removing a portion of its pelvis. I made a large incision from the anus through the perineum of the calf, so as to permit my hand to enter with a saw, with which I severed the symphysis pubis. I then applied the saw to the anterior border of the pubis, as close to the acetabulum as possible, and cut it through to the obturator foramen; at the same time continuing the separation until the ischium was divided. I then adjusted the saw to the opposite side of the pelvis and severed it in a like manner. These cartilaginous segments were then removed with a long bistourie, which, in this case, was far better than an embryotomy knife, owing to the fact that the buttock of the calf had already been lodged close to the vulva of the cow. By this means the dissection could be carried out externally, after applying the instrument to the desired spot. Some of the sawing was also accomplished externally by an assistant, whilst my hand was resting on the back of the saw; thereby guiding the instrument until the separation was completed. After removing the severed portions of cartilage there was no more resistance perceived. The pelvic dimensions of the calf were then decidedly diminished and a free access into its body through the aperture made by enlarging the anus was established, enabling me to remove all the internal organs within reach. I next attached a hook to each side of the remnant pelvic frame, and with the additional tail-hold the fœtus was extracted without any impediment or violent traction. Besides decreasing the contour of the buttock by this operation, we removed the wedging

influence otherwise offered by the hind extremities, which is of great significance. They become entirely loose and find a position deeply imbedded in the flank and extended well forward under the abdomen as soon as traction is brought into effect.

In order to facilitate the passage of the fœtus, I made a uterine irrigation of a decoction of linseed, which proved very efficacious by reason of its blandness and slippery property. This irrigation was accomplished by pouring the tea from a pitcher into a funnel annexed to a common inch rubber hose about four feet in length, which had been previously introduced into the uterine cavity. "By suspending the linseed, secured in a coarse bag, in the water it is to be boiled in, we prevent the seed itself entering the uterine cavity, which, although perfectly innoxious, is not solicited." This method of lubrication, in my estimation, is notably preferable to any oleaginous material that might be used. It is not so rapidly absorbed by the skin and hair of the fœtus. When injected at a temperature of 98° it is very agreeable and soothing to the uterine walls; besides it is considerable cheaper than any of the oils or even lard, and can be at all times conveniently obtained. After the delivery was effected the cow still manifested a semi-comatose state, from which she soon revived through the agency of alcoholic stimulation. From this time on she continued to improve without exhibiting any untoward symptoms for forty-eight hours, when entire convalescence was restored. The plecenta came away soon after the expulsion of the fœtus. The surgical portion of the treatment was perfected in one hour.

This is the third case of dystocia dependent upon a posterior presentation with the hind extremities flexed, that I ever managed with the aid of the saw, and am highly gratified with the mechanical success thereby attained. I feel assured that the utility of a six inch saw adjusted to a rod thirty inches in length, so that the sawing may be executed externally by an assistant, would be of inestimable obstetrical service in various cases of difficult parturition where embryotomy is indicated. Moreover, the danger of injuring the operator or maternal structures is far less to be dreaded with a saw than with a knife; hence wherever a selection of either instrument can be made the former should be chosen.

CORRESPONDENCE.

STAMPING OUT PLEURO-PNEUMONIA.

By E. F. Thayer, V.S.

The recent "scare" across the water, caused by the arrival of cattle affected with pleuro-pneumonia (doubtless caused by exposure in snow-bound cars), reflects the injury, if not the ruin, of our great interest in the export cattle trade. The question recurs, why not extirpate the scourge throughout the United States? It can be done, for it was done in Massachusetts, and we see no reason why the same result cannot be obtained in other States; not without labor, nor without money, yet if successfully accomplished, it would be the greatest boon that could be conferred upon the farming and grazing interests of this country.

How can it be extirpated? Enact stringent laws giving power to competent persons to trace out and visit all suspected herds, and either at once slaughter them, or isolate and afterwards slaughter, the payment for the animals to be apportioned to the town and State, the expenses of the Commissioners to be paid by the State. It is not probable that the disease exists in more than three or four States. One-quarter, or at most one-half, a million of dollars would finish the work, unless it exists more extensively than the reports indicate. It may be said that there is no immediate danger, as the disease does not exist in the localities from which the exported cattle are purchased. True, but who knows how distant the day is, in which, if the malady is allowed to exist, animals from diseased herds will be sold to western buyers; and with the long period of incubation, the number of animals which may be infected before the malady is recognized, if it should be introduced among the millions of cattle on the Texas plains, the losses would be appalling. To the writer it appears suicidal not to take hold of the matter and press it to a successful termination. The often repeated statement that Great Britian has suffered an annual loss of ten millions of dollars ($10,000,000) by

preventable contagious diseases among cattle, should be sufficient warning to the American people to take hold of the subject in earnest.

SUNDRIES AND NEWS.

VETERINARY HONORS.

At the meeting held on the 12th of December, 1878, Prof. Generali, of the Veterinary School of Milan, and Prof. Liautard, of the American Veterinary College in New York, were elected foreign corresponding members of the Central Society of Veterinary Medicine in Paris.

VETERINARY SCIENCE IN FRANCE AND BELGIUM.

Medical universities having been established at Lyons and Toulouse, Prof. Chauveau, Director of the Lyons Veterinary School, has been elected to the chair of comparative pathology in the first named university, and Professor Toussaint, of the Toulouse Veterinary School, to the chair of physiology in the university of that city. Prof. Wehenkel, of the Brussels University School, fills the chair of morbid anatomy and comparative pathology in the Brussels University.

PROLIFIC COW.

Hon. John D. Rue, of Dutch Neck, Mercer County, New Jersey, is the owner of a grade cow that has borne and raised nine calves within thirty-six months, or three years, having had twins three times, and now has triplets, alive and doing well, which she dropped in December last. Her first pair of twins were dropped in January, 1876.

OPPORTUNITY FOR A PRACTICE.

The Deer Creek Farmer's Club, of Harford County, Maryland, inquires for a regular good veterinarian. The prospects are

said to be excellent, and the perspective to obtain a good practice very advantageous. Applications can be made to Mr. Geo. E. Silver, Deer Creek P. O., Harford County, Maryland.

GLANDERS AND FARCY.

Glanders and farcy are prevailing to such extent in Springfield, Massachusetts, that the attention of the city council has been called to the necessity of taking measures to eradicate these diseases. Taking into consideration the existence of these blood-poison diseases, the prevalence of pleuro-pneumonia, the existence of hog cholera, we cannot avoid believing that the time is approaching when veterinarians will have an opportunity to show Americans the importance of their profession.

EXCHANGES, COMMUNICATIONS, ETC., RECEIVED.

HOME EXCHANGES.

Scientific American, Hospital Gazette, Medical Record, Country Gentleman, Turf, Field and Farm, New York Rural, American Bookseller, American Agriculturist, Prairie Farmer, Practical Farmer, Ohio Farmer, Scientific Farmer, Maine Farmer, National Live Stock Journal, Western Farm and Live Stock Journal, Index Medicus, Medical and Surgical Reporter.

FOREIGN EXCHANGES.

Journal de l'Agriculture, Veterinarian, Veterinary Journal, Recueil de Medicine Veterinaire, Archives Veterinaires, Mouvement Medical, Clinica Veterinaria, Revue fur Thierheilkunde und Thierzucht, Archiv fnr Wissurschoftliche und practishe Thierheilkunde, Bulletin de la Societe Central de Medicine Veternaire, Gazette Medicale.

NEWSPAPERS.

Western Sportsman, Western Agriculturist, Our Dumb Animals, Vermont Record, The Ploughman, New England Farmer,

The Leader (Can.), The Farm Journal, Farmers' Review, The Nation, The Farmers' Head Light, The Gazette (Can.), Medical Times and Gazette.

CATALOGUES, &c.

Bellevue Spring Session Announcement, 1879; Alumni Association, University of the City of New York; Prospectus of Royal Dicks Veterinary College; Announcement of Spring Session of the University of the City of New York; Announcement of the College of Physicians and Surgeons; 90th and 91st Reports of Regents of University of State of New York; Repertorium der Thierheilkunde; Universal Repertorum der Leistungen und Fortschritte auf dem Gebiette der Veterinarnissenschoften; Der Thierarzt; Revue Medecine Dosemetrigue Vetermaire; Annnal Commencement of Bellevue Hospital Medical College; Annual Commencement of University of City of New York; Annual Commencement of the College of Physicians and Surgeons.

COMMUNICATIONS.

F. S. Billings. M.V., C. P. Lyman, V.S., A. A. Holcombe, D.V.S., C. B. Michener, D.V.S., A. H. Rose, D.V.S., Prof. D. McEachran, V.S., H. B. Miller, W. J. Coates, D.V.S., E. F. Thayer, V.S., J. F. Winchester.

CORRECTION.

Mr. Editor:—I can but feel that I made an error, and did a worthy person an unintentional injustice, in my article on "Immobiliti," when I said, "Notwithstanding a long-continued, and, in some instances, bare-faced plagiarism of French veterinary literature." I should have laid emphasis on the little use which most of our people make of these valuable additions to our lit-

erature, as exemplified in the want of knowledge I endeavored to show up, and I can only say that the real sharpness of my words escaped me, in the haste and drive of work, until the printed article came before me.

Yours,

BILLINGS.

BERLIN, Feb. 4, 1879.

VETERINARY STATISTICS IN GERMANY.

THE OFFICIAL VETERINARIANS, THE NUMBER OF ANIMALS AND THEIR CHARGE AND THE TERRITORY OVER WHICH THEY HAVE CONTROL:

No. of Official Veterinarians in		Extent of Territory in Square Kilometers.	Number of Large Animals in Same.	Official Veterinarians to Klms.	No. of Large Animals under Inspection of Same.
Prussia	357	347,164	14,461,369	972	40,508
Bavaria	160	75,683	3,716,278	474	23,227
Wurtemberg	64	19,504	1,106,745	305	17,392
Baden	53	10,075	741,021	284	13,944
Saxony	44	14,990	871,744	341	19,812
Royallands	19	14,492	659,177	763	34,693
Hesse	21	7,676	373,073	366	17,765
Oldenburg	3	5,375	232,467	1,792	77,489
Lubeck	1	519	28,440	519	28,440
Dukedom Birkenfeld	1	513	20,173	503	20,173
Weimer	6	3,636	169,141	727	33,714
Saxon-Meiningen	5	2,468	89,551	494	17,910
Anhalt	5	2,347	99,243	469	19,844
Coburg-Gothe	2	1,968	85,562	984	43,281
Altenburg	6	1,322	78,710	220	13,028
Waldeck	3	1,135	37,264	378	12,421
Sohwarzburg Rudolstadt	2	942	32,950	436	16,475
" Sondershausen	2	862	37,142	431	18,571
Reussj L.	4	829	38,368	207	9,592
Schaumburg-Lippe	1	443	17,158	443	17,158
Hamburg	5	407	29,655	81	5,931
Reuss a L.	4	316	14,139	316	14,139
Lubeck	1	283	14,236	283	14,236
Bremen	1	250	19,995	250	19,995

From Thierartztliche Jahrbucher, by Dr. J. E. D. Falke, Heft V., 1878.

BILLINGS.